KG
11365
509

1896pnas.proj..510w

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KG-11365.509

1890phate.proj...51ow

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1890phae.proj..510W

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KG11365.509

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1890phae.proj..510W

May 3. 1890.

Settlement of Doubtful Cross with Meridian Circle.

+ 2° 2 and 7 52

3h 54 + 52 54
10 30
+ 6 36

3 + 37
10 44
+ 6 49

Pos. Zero 314.5
45.0
Setting 269.5
~~45.0~~

Clouds

10	57	32.0	52
	58	21.3	"
	58	58	58
	59	21.3	"
	59	56.0	752
11	0	45.4	"
	1	14.7	758
	1	45.5	"

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1890phae.proj..510W

May 3, 1890.

11	2	19.5	52
	3	9.4	"
	3	38.0	58
	4	9.6	"
	4	50.1	
	5	40.5	
	6	8.6	
	6	40.8	
	7	19.7	
	8	10.1	
	8	38.0	
	9	10.8	
	10	0.5	
	10	57.9	
	11	18.5	
	11	52.0	

Order in preceding transits 752, 752, 758, 758, Both in southern half.

This star is not double. No other star sufficiently near it to be confounded with it.

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1890phae.proj..510W

May 3, 1890.

+ 3° ~~AK A 849~~ 849

4h 46 +53.5°
11 27
6 41

36	54.0	849
~~37~~	8.1	48
~~37~~	46.0	48
~~38~~	5.0	49
~~38~~	~~47.0~~	
~~39~~	~~0.5~~	
~~40~~	10.0	
40	23.5	

Clouds to thick to for transits.

Order in preceding transits, 849, 848, 848, 849. ~~84~~ Both in southern half.

Thin is a faint star reading this in about the position indicated by Profs Rogers First transit good after transits interrupted by clouds.

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1890phae.proj..510W

May 6, 1890.

	B. + C. 11 + 2.		B. 39 4.	
1V	20	32.0	20	0.0
	21	32.0	21	0.0

Dis. Sup. I. Phot. R.
N. obs. Trace. Compared with Lat. II.

1V 3 4 23.0
4 12.
1V 42 3V.
32.
1V 43 7.

1V	31	22.0	79.0
		34.0	109.2
		V9.0	4 4.9
	32	13.0	190.0
		2V.0	4V.1
		42.0	109.0
		V3.0	46.2
	33	4.0	144.7
		16.0	4 4.2
		27.V	191.2
		40.0	4 4.2
		49.V	194.1
	34	0.0	4 2.4
		12.0	19V.0

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1890phae.proj..510W

May 6 1890

1V	3K	22,0	23,3
		3K.V	197,0
		K9,V	23,2
		V9,V	192,K
	3V	11,V	21,2
		21,V	19K,6
		32,0	26,3
		K1,0	122,9
		V2,0	23,9
	36	K,0	190,9
		1V,0	26,0
		2K.V	129,V
		3K.V	23,2
		K3,V	19K,0
		V3,0	22,V
	37	K,0	129,0
		16,0	23,2
		29,0	193,9
		K2,V	23,2
		Clouds.	
	38	10,0	196,2
		K7.V	27,0
	39	2,0	190,2
		1V.V	21,7
		29,V	192.V
		K3,0	7K,9
		V2,V	19V,3

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1890phae.proj..510W

May 6. 1890.

Clouds.

1v	41	23.v	93.4
	4v	2,0	174.9
		20.v	101.9
		43.0	17v.0
		v4.0	104.4
	43	12.v	163.4

Not seen later.

Clouds now thinner, but too variable for Limit of Vis,

B. + C. 1142.

1v	v0	31.7	
	v1	31.7	

B. 994.

1v	50	0.0
	v1	0.0

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1890phae.proj..510W

May 12. 1890.

Circumpolar Variables. H. Obs.

814 ζ Persei.

2 A +v7.2

10 50

+ 8 42

Sky still too bright.

1853 R Aurigæ.

5 3 +v3.0

11 17

+6 14

Light cloud

Troubled by twilight & cloud.

8h 09m

h 4 4/15 R 3i in large telescope

Same in finder

Est. 10.0

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1890phae.proj..510W

May. 12, 1890.

2478 R Lyncis.

6	49	+vv.o
11	45	
+4	56	

~~b 4 R +~~

8 23 R = C in finder
b 3.5 R 1.5 C in large telescope

Est. 7.9

3825 R Urs. Maj.

10	33	+69.r
12	00	
+1	27	

8 41 i 4 R 2j in large telescope
i 3.5 R 2j in finder

Est. 11.1

Probably very thin cloud in this region at time of estimate.

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1890phae.proj..510W

May 12, 1890.

4511 S Uro. Inf.
12 33 +60.4
12 18
— 15

6 clouds

9 10 16 ~~F~~ b ~~3.5~~ $\frac{4}{S}$ 2 d in large telescope
16 ~~F~~ b 4 S 1 c in finder

Est. 7.8

4557 S Urs. Maj.

9 18 c 5 S 2 d in large telescope
c 5 S 2.5 d in finder

Est. 8.3

5157 N Boötis.
14 17 +5K.r
12 53
— 1 24
Clouds.

9 38 m $\frac{2}{4}$ S 3.5 n in large telescope
Too ft. for finder

Est. 13.3

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1890phae.proj..510W

May 12, 1890.

5190 R Camelop.

1K	K0	+AK.1
13	15	
−1	25	

9 56 a 5 R 7 b in finder
a 5 R 3 b in large telescope

Est. 8.1

5948 R Urs. Min.

16	3K	+7v.9
13	35	
−2	59	

10 14 c 2.5 R 2.5 d in finder
c 3 R 2 d in large telescope

Est. 9.3

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1890phae.proj..510W

May. 12, 1890.

5955 R Draconis.

16 26 +67.K

13 50

— 2 36

1025 g' 3.5 R 1.5 k in large tel

Too ft. for finder

Ext. 12.3

Comet a 1890. (Brooks) Gr. obs.

20 K2 +39.7

14 1B

~~14~~

—6 29

Became thickly cloudy, suddenly preventing observation of comet.

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1890phae.proj..510W

May 13. 1890.

Circumpolar Variables H. obs.

Cloudy.

Now some clearer.

λ Cygni.

20 Δ +v7.1

12 v

$-\Delta$ 3

Cloudy again.

8 35 Still cloudy

8 41 Still cloudy, with no prospect of clearing.

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1890phae.proj..510W

May 18 1890

Observed Mars. ~~from~~ Drew + colored drawings See Boyden Book No (12 in. telescope) p 1.

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1890phae.proj..510W

May 19. 1890.

Circumpolar Variables. Sr. obs.

7609 T Cephei.

21 r +67.2

11 35

– 9 30

Clouds

Still cloudy

7220 S Cygni.

20 ~~30~~ +r 7.2

12 30

– 7 38

Cloudy again

8 45 g ~~3 2.15~~ 2.25 f h in large tel.

Too ft for finder

Est. 10.8

Estimate through some cloud perhaps slightly affecting it.

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1890phae.proj..510W

May 19, 1890.

7609 T Cephei.

21 5 +67.2

12 58

— 8 07

9 12 T = d in large telescope
Same in finder

Est. 6.3

7779 S Cephei

21 37 +78 3

13 22

— 8 15

21 55 +78.9

13 25

— 8 30

9 30 f 3 3 2 k in large telescope
Too faint for finder

Est. 12.1

8600 R Cassiop

23 52 +49.7

13 45

— 10 7 too low

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1890phae.proj..510W

May 19, 1890.

7 N Cassiop.

1 10 +72.1
13 50
12 40

Clouds

1 10
14 5
12 55

Clouds again

1 10
14 27
13 17

Clouds again

"N" 2 S 3 "O" in large telescope.

10 40 ~~1.5 S 3.5 O in large telescope~~
Too faint for finder

C st. 12.0

Estimates made through thin but varying clouds.

Much troubled by clouds during evening. Relative ests thought to be pretty good but absolute ests probably somewhat affected.

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1890phae.proj..510W

May 21. 1890.

Circumpolar Variables. Gr. Obs.

δ Persei.

2 8 +v7.2

11 53

+9 45

2 8

12 10

+10 2

Too low & in clouds

~~Doubtful cases with Mer. Circle Gr. Obs.~~

~~Am. +v0° 37 3176 and~~

~~20 46 +v0.9~~

~~12 25~~

~~8 21~~

δ Persei

8 38 e 3.5 & 3 f in. large telescope
Same in finder

Est. 9.7

Troubled & delayed by clouds & twilight but at time of observation sky free from

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1890phae.proj..510W

May 21, 1890.

clouds & seeing pretty good

$\mathcal{T}$ Persei

8 44 $\mathcal{T}$ = C in large telescope
Same in finder

Cet. 8.6

~~$\mathcal{T}$ Cassiop~~

Doubtful Cases with Rev. Circle, F.D.

+ν 0° 3176 and 3171

20	46	+ν 0,9
13	16	
−7	36	

20	52
13	17
−7	35

Poz. Zero 9 52
4 50
Setting 140.2

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1890phae.proj..510W

May 21, 1890.

13	18	5.9	71
	18	47.1	76
	19	20.4	71
	19	44.1	76
	20	6.0	
	20	47.8	
	21	21.0	
	21	45.2	
	22	15.5	
	22	57.1	
	23	30.8	
	23	54.9	
	24	32.3	
	25	13.9	
	25	48.5	
	26	12.5	
	27	5.0	
	27	47.0	
	28	21.4	
	28	45.1.	

Order in preceding transits 3171, 3176, 3171, 3176. Both in northern half.

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1890phae.proj..510W

May 21, 1890.

DM +52° 2778 ✱

~~No. 7~~ No. 2778 and
2781 are in the position indicated by
the DM & these two are the brightest
stars in this immediate vicinity.
There are however quite a number of
faint stars, which might possibly be
seen with the meridian circle & so con-
founded with the one in question.
The nearest one of these however
is as far distant from 2778 as 2781 is.

Circumpolar Variables. Mt. Obs.

T Cassiop.

0	1A	+V 5.9
13	55	
13	37	

9 52 — g 3 ☆ 2.5 h in large telescope
g 3 ☆ 1.5 h in finder

Est. g.0'

Sky clear. No trouble from cloud
Altitude rather low

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1890phae.proj..510W

May 21, 1890.

R Cassiop

23 52 +49.8
14 10
− 9 42

10-14 "l 3.5 ✓ R 3.5m in large telescope
Rather too faint & low for finder

Est. 10.1

Altitude quite low & so estimate considered not quite so good. Slight allowance made however for low altitude

Comet a 1890 (Brooks Mar. 19) Fr. obs.
Comet 1890. II.

20h 16m 18s +44° 29'
− 2 2 − 1'
20 14 16 +44° 29'
14 38
− 5 36

14h 43 52.0 *
44 29.0 ∈
44 47.1 *
45 4.5 ∈

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1890phae.proj..5i0w

May 21, 1890.

~~14 45 50.0~~
~~46 27.2~~
~~46 44.0~~

14 47 36.0 *
48 13.4 ∅
48 29.6 *
48 46.5 ∅

49 20.0
49 57.6
50 14.8
50 31.0

51 10.0
51 47.5
52 4.3
52 19.6

53 24.1
54 2.0
54 19.5
54 33.7

55 15.0
55 54.0
56 11.0
56 24.0

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1890phae.proj..510W

May 21, 1890.

14 57 14.2
57 53.1
58 9.8
58 22.8

Comparason Star = DM +48° 3089 (8.8 A)

Order in preceding transits star, comet, star, comet. Both in northern half.

Comet quite bright. Nucleus estimated at 9.5 mag. Estimate of total brightness 9.2 Nucleus considerably condensed but not quite stellar. Nebulousity rather elliptical in shape & extends farther on the southern side. Faint traces of the tail can be seen to the south for a distance of 15' to 20'.

Fr. 3451.			B. 394.		
15	17	59.7	11	12	0.0
	18	59.8		13	0.0

∴ Fr. 3451 is 8^m 26.4 slow

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1890phae.proj..510W

May 21, 1890

Disappearance of Sat II
Compared by SAT I. Photometer R-
S. obs. F rec.
No time for chronometer comparison before observation.
Strap of driving clock found broken.
Thin Clouds and increasing daylight

15	05	36.0	Sat. I disap.	343.0		71.1
	06	5.3		54.1		
		25.6		340.0	18.3	73.6
		43.0		56.2		76.2
	07	3.4		333.5		7.3
		20.6		56.8	83.3	
						82.6
		58.6		241.0	331.0	
	08	15.0	Sat. II disapp.	333.0	63.0	82.0
		33.6		243.3	333.3	
		48.7		338.8	64.8	92.5
	09	5.7		241.0	331.0	92.3
		8.6 (2.)		336.3	66.3	92.8 82.6
		33.3		246.2	336.2	93.1
		49.0		339.3	69.3	
	10	6.7		240.8	330.8	92.0
		20.0		338.8	64.8	92.6 82.8
		35.0		241.9	331.9	106.1
		49.0		348.0	70.8	
	11	6.6		245.8	335.8	92.2
		21.0		338.0	64.0	99.2 80.8

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1890phae.proj..510W

May 21, 1890

11	35.1	237.0	327.0	102.3
A	49.9	339.3	69.3	
12	5.5	240.9	330.9	100.5
	19.0	341.4	71.K 101.K	7K.6
	37.7	242.2	332.2	
	51.2	343.0	~~100.8~~ 100.8 73.0	
13	5.4	242.2	332.2 ~~99.0~~	99.0
	20.4	341.2	71.2 ~~99.8~~	99.8
	37.4	239.9	329.9 99.9	20.1
	53.6	348.9	~~7K.9~~ 109.0	7K.0
14	52.8	233.0	323.0 115.9	6K.1
15	9.6	349.0	79.0 116.0	6K.0

	37.1	165.7		
	53.0	Sat. I disap. < 238.2		
	14.3	172.0		
	34.4	219.0.		
16	32.3	179.6		

Not seen later - (daylight & thin clouds).
Smith of visibility.

17	39.8	178.3	
18	7.8	230.0	51.7 60.2
	42.6	170.8	111.9 55.9
19	8.0	231.0	

Bellum 103

15	22	0.0
	23	0.0

B & C. 1182

15	22	25.1
	23	25.0

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1890phae.proj..slow

May 21, 1890

Recpt. SHT VII Comparison Sat I
Photometer R— S. to. Zen.

Limit of visibility

40	7.7	173.0
	47.7	237.0
~~41~~	~~14.0~~	~~2~~
	~~43.4~~	
~~15~~	~~42~~	~~13.2~~
	~~56.6~~	164.5
43	21.4	247.2
45	16.4	Seen
	39.8	170.0
47	10.6	240.1
	34.6	166.3
	58.7	243.2
48	20.0	160.7
~~[illegible]~~	34.0	237.4
	59.8	161.2
49	30.5	249.3
	47.9	159.8
50	4.5	248.0
	20.6	158.1
	35.7	247.0
	53.6	156.7
51	20.4	249.0
	41.0	153.3

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1890phae.proj..510w

May 21 1890.

15	52	0·0	243.7 m
		20·6	147·3
		44·4	246·0
	53	9·7	154·4
		36·6	245·8 m
		57·0	155·0
	54	20·0	250·0
		41·5	150·7

clear + daylight prevent further obs.

B & C 1182			Ballou 103		
16	5	24.3	16	5	0.0
	6	24.3		6	0.0

Bal. 103			B 394		
0	11	57.3	0	12	00
	12	57.5		13	00

∴ Ballou 103 is slow of 394, 2.5 secs.
∴ B + b 1182 is 21.8 secs. fast. ✓

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1890phae.proj...slow

May 22. 1890.

Senior Class at Observatory this evening. Showed them the moon and Saturn.

B. + C. 1142.			B. 394.		
13	29	21.5	13	29	0.0
	30	21.5		30	0.0

Dis. Sup. I. Plot, R #. P. obs. Sp. rec,
Compared with ~~Sat. IV.~~ 1st Sat. sol, = Sat. III

13	5 0	3 5.7
	4	12.
13	5 4	15.
		22.
13	5 9	10.

13	5 2	3 5.0
		15.5
	5 3	0.0
		10.0
		21.5
		29.0
		39.5
		50.0

9 4.7
16 2.9
103.7
164.4
102.7
156.2
105.6
167.0

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1890phae.proj..510W

May 22, 1890.

13	vK	3,v	10v,7
		11,0	v9,2
		26,0	101,6
		39,v	1v4,6
		v3,0	10v,4
	vv	3,v	16v,v
		1v,0	106,3
		32,v	16K,6
		KK,0	10K,4
		vK,0	166,v
	v6	4,v	10K,3
		20,0	167,2
		3v,v	10v,3
		v1,v	161,0
	v7	3,v	107,9
		1v,0	1v7,7
		32,0	104,2
		K7,0	162,2
	v4	0,0	109,3
		10,v	160,0 4
		26,0	110,v
		34,v	1v3,0
		v7,v	116,3
	v9	11,v	1K4,2

Limb of Vis.

	v9	Kv,0	120,9
		v6,0	1K6,2
14	0	10,0	11v,6
		22,v	1v0,K

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1890phae.proj..51ow

May 22. 1890.

Sat. I equal Sat. IV at the point marked at.

Images large and observation difficult owing to proximity of Sat. IV.

Seeing poor.

B. + C. 1182.			B. 394.		
14	7	21.1	14	7	0.0
	ℰ	21.0		ℰ	0.0

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1890phae.proj..510W

May 23. 1890.

Comet a 1890 (Brooks Mar. 19) Obs.
Comet 1890 II.

20 h 23 +V0 26
−1 −V
20 7 23 +V0 21
15 8
−10 59
−4 59

Pos. Juno 296.9
45
Setting 341.9

Comparison Star DM +50° 3021 (8.4 M)

15 17 53.0 E
18 56.2 E
20 14.5 *
20 38.8 *

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1890phae.proj..51ow

May 23, 1890.

15	21	27.1
	22	26.0
	23	48.4
	24	9.1
	24	49.0
	25	44.3
	27	9.2
	27	30.1
	28	7.5
	29	3.0
	30	28.9
	30	49.6
	31	39.1
	32	33.5
	34	0.0
	34	22.0

Order in preceding transits comet, comet, star, star. Comet in preceding half inside. Star in ~~Southern~~ half outside

Nucleus rather sharply defined. Diameter of ~~total~~ principal nebulosity 3'. Diameter of total nebulosity 4' to 5'. Faint traces of tail for ~~one~~ 25'

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1890phae.proj..510W

May 27. 1890.

Fr. 1327. B. 394.

2	v7	37.3	22	K2	0.0
	v8	37.5		K3	0.0

∴ Fr. 3451 is $8^m\ 35.2$ slow

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1890phae.proj..510W

May 24. 1890.

Comet a 1890. (Brooks Mar. 19) Sr. Ob.

20	4	+5 1.4
14	40	
−6	24	

20	4
14	50
−5	14

Pos Zero 67.4
45
Setting 112.4

15	10	39.3 ∝
	11	10.0 ∝
	11	41.0 *
	12	45.8 *
	13	26.1
	13	55.6
	14	28.0
	15	32.2
	16	16.5
	16	43.6
	17	17.6
18	~~23~~	22.0

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1890phae.proj..510W

May 24, 1890.

15	19	3.0
	19	30.4
	20	4.1
	21	9.5
	21	54.3
	22	20.0
	22	55.5
	24	1.0

Order in preceding transits comet, comet, star, star. Both in northern half.

Comparason star is D M +51° 2774 (8.6 A)

Nucleus fairly well defined but not quite stellar. Diameter of principal nebulosity about 2'. Tail not traced so far as last night probably from stronger moonlight

Hv. 1327.

15	39	40.7
	41	40.6

B. 394.

11	22	0.0
~~23~~		~~0.0~~
24		0.0

Students here this evening. Showed them the moon. Saturn and Const.

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1890phae.proj..510W

May 31. 1890.

Strong twilight.

Settlement of doubtful cases with Fr. Ls.
Iner. Circle.
+v 4° 2406 and 2405

20	40	+v 6.0
12	40	
− 8	00	

8h 0m Estimates of seeing 7.5.5.

20	42
13	5
− 7	37

DM +2405 precedes 2406 by 8 sec. slightly ~~the right~~ south in amount. There is also another star about 9.5 mag. foll. 2405 2 sec. very slightly north. A coarse double (mag of comp. 10.0) foll. 2406 15.5 sec. 1' south. Another 8.8 mag foll. 2406 35 sec. 4.5 north. Thus (8.8) may be the star spoken of as at 49.91 sec.

Pos Zero 305.8
450
Setting 350.8

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1890phae.proj...510W

May 31, 1890.

13	15	23.5	2405
	15	30.0	2406
	16	29.3	2405
	16	39.8	2406
	17	12.7	
	17	18.7	
	18	17.4	
	18	28.2	
	19	11.8	
	19	18.0	
	20	16.9	
	20	27.7	
	20	57.5	
	21	3.7	
	22	19	
	22	12.6	
		~~41.9~~	
	23	14.0	
	23	20.2	
	24	18.5	
	24	29.5	

Order in preceeding transits 2405, 2406, 2405, 2406. Both in southern half.

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1890phae.proj..510W

May 31. 1890.

Circumpolar Variables. St. No.

R Aurigae.

5 3 +v 3.0

13 47

+ 8 44

9 07 1h 3 R 3 i in large telescope
Rather too faint for finder.

Est. 10.3

R Lyncis.

6 49 +v v. 1

14 15

+ 7 16

9 17 C 4 R 3 d in finder
C 4.5 R 3 d in large telescope

Est 8.5

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1890phae.proj..510W

May 31, 1890.

R Ursae Maj.

10	33	+62.3
14	15	
3	42	

9 35 d 1R 2.5 e in finder
d 1R 3 e in large telescope

Est. 7.8

T Ursae Maj.

12	33	+60.4
14	35	
2	2	

9 55 Y a 2 T 2 b in finder
a 23 T 2 b in large telescope

Est. 7.3

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1890phae.proj..510W

May 31, 1890.

S Ursae Maj.

10 04 S = e in large telescope
Same in finder

Est. 8.8

N Bootis.

14 20 +V4.2
15 00

40

na 2 S 3 n. in large telescope
Too faint for finder

Est. 13.8

R Canes.

14 40 +A4.1
15 17

37

c
d 3 R 2 d in large telescope
c
d 3.5 R 2 d in finder

Est. 8:4

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1890phae.proj..510W

May 31, 1890.

R Lyrae Minus.

16	34	+72.9
15	40	
	−54	

10 55 C 2.5 R 2d in finder
C 1 R 3d in large telescope

Est. 9.2

Estimate of seeing 7.6.7

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1890phae.proj..51ow

2

June 7. 1890.

Cloudy.

Now somewhat clearer.

Circumpolar Variables. Gr. obs.

16	26	+67.4
14	0	
-2	26	

9 7 Seeing 6. 7. 6.

R Draconis.
l 1.5 R 3 m in large telescope.
9 17 Too ft. for finder.
Est. 12.5

S Cygni.

14	2	+57.2
20	2	
-6	43	

j 3 R 2.5 K. in large telescope.
9 36 Too faint for finder.
Est. 11.7

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1890phae.proj..510W

June E. 1890.

2

T Ophei.

21 6 +67.7

14 v 0

-6 16

~~T = d in finder.~~
~~June in large telescope.~~
~~Est.~~

C 3 P 2 ~~=~~ d in finder.
9 v 7 C 3 T 1.v d in large telescope.
Est. 6.9

N Ophei.

21 37 +74.3

1v 10

-6 27

i 2 N 4 j in large telescope.
~~i = N in finder.~~
~~Est.~~
10 23 i 1 N 4 j in finder.
Est. 10.9

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1890phae.proj..510W

June 2, 1890.

R Cassiop.

23 52 +49.7
1v 30

−d 22

l 2 R 3 m in large telescope.
10 44 Too low and faint for finder.
Est. 10.2

T Cassiop.

2E
4 1d +vv.9
1v v0

−d 2d

f 2 T 2 g in large telescope.
11 13 f 2v T 2 g in finder.
Est. 4.v

11 15 Seeing 6. 6. v.

Sky not perfectly clear and moon bright. to night.
Possibly absolute estimates slightly affected.
but the relative estimates thought to be good.

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June 7. 1890.

B. + C. 1182.

#		
11	4K	47.V
	4V	47.V

B. 394.

11	~~4V~~	~~0.0~~
	46	0.0
	47	0.0

12	7	11
	2	1V
12	1V	23
11	46	0
		~~2.~~
	29	23
11	4K	K2
12	1K	11.

Aft. time eclipse.

Dis. Sup. I. Comp. with Sat. III.
Phot. R. S. obs. Sp. rec.

11	V2	K2.0	rej. —
	V9	17.0	1V7.0
		34.0	262.K 1
		V7.0	1V4.2
12	0	1K.0	260.7
		29.0	1V6.2
		KV.0	264.2 2
	1	3.V	1VV.2
		24.V	261.9
		K2.0	1V4.0
	2	V.0	rej. 3
		30.0	263.0

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1890phae.proj..510W

June 7. 1890.

12	2	K7.V	1VA.1	3
	3	K.0	266.2	
		27.0	1V3.3	
		K2.0	26K.0	
	K	0.V	1V3.2	K
		16.0	26K.9	
		30.0	161.K	
		K9.V	262.3	
	V	K.0	1V6.3	V
		19.V	263.0	
	6	12.V	1V7.0	
		30.V	rej.	
		V0.0	263.2	
	7	7.0	1V9.1	6
		19.V	2VA.9	
		31.0	1VA.7	
		K1.V	261.A	
		V1.V	160.0	7
	A	2.0	2V6.A	
		1V.0	163.0	
		2K.0	2VK.A	
		32.0	166.1	8
		K2.V	266.0	
		V3.0	168.V	
	9	3.0	2V7.9	
		1A.0	162.0	9
		30.V	2VV.2	

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1890phae.proj...510W

June 7. 1890.

12	9	44.5	161.0
		57.5	257.4
	10	14.5	165.4
		27.0	262.9
		40.0	160.4
		49.5	264.4
	11	1.5	159.2
		12.5	259.1
		24.5	164.1
		35.5	257.0
		44.5	167.2
		54.0	254.4
	12	4.0	167.2
		16.0	259.1
		27.5	173.5
		43.0	253.0
		52.0	166.9
	13	3.5	249.2
		13.0	176.4
		22.0	253.0
		31.5	175.6
		43.5	242.9
		51.5	147.5
	14	2.0	239.9
		13.0	196.1
		24.5	224.3

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1890phae.proj..510W

June 7. 1890.
not seen later.

Limit of V is.

12	14	V 4.0	191.9
	15	12.V	230.7
		26.0	194.1
		39.0	231.4

B. & C. 1142.

~~12~~	~~21~~	~~46.7~~	
12	22	47.0	
	23	47.0	

B. 394.

~~12~~	~~23~~	~~0.0~~	
12	24	0.0	
	2V	0.0	

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1890phae.proj...510w

June 9. 1890.

Circumpolar Variables. Fr. Obs.

2 Δ +v7.v

13 2v

+11 17

Sky still too bright for variables

~~+54° 2406 and~~

~~+v0°~~

~~+v4°~~ 3377 and 3375

21h 26m +69,v

13 40

−7 46

Pos Zero 107.6

45

Setting 152.6

22 26

13 52

−8 34

21 26

14 00

−7 26

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1890phae.proj..SIDW

June 9, 1890.

14h	0	53.5	3377
	1	1.0	75
	1	15.0	95
	1	32.2	77
	1	51.6	
	1	59.0	
	2	13.0	
	2	29.2	
	2	55.6	
	3	3.5	
	3	16.7	
	3	34.0	
	3	58.0	
	4	5.5	
	4	19.0	
	4	36.0	
	5	0.5	
	5	8.1	
	5	21.7	
	5	38.5	

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1890phae.proj..510W

June 9, 1890.

Order in preceding transits 3377, 3375, 3375, 3377. 3375 in southern half. 3377 in northern.

3375 is 5.7 ~~ss~~ north of 3377 by D M. but it is actually about 10' north. No other star 3377 to be confounded with it.

Circumpolar Variable. Tr. Ob.

S Cassiop.

1	10	+72.1
14	22	
13	12	

q 20 "p" 4 S 2.5 "q" in large telescope
Too ft. for finder

Est. ~~12.9~~ 13.0

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1890phae.proj..51ow

June 9, 1890.

N Persei.

2	δ	+v 7.2
14	50	
12	42	

q 35 "f" 3 S 3.5 g in large telescope
f 3 S 3.5 g in finder

Est. 9.9

T Persei

q 40 C 3 T 3 d in large telescope.
Same in finder

Est. 8 8

Looked at Mars.

Deimos
Mars seen by M. with a power of 20 some 200. Afterwards

Deimos thought to be ~~seen~~ glimpsed once or twice by Prof. Wsh. Pickering.

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1890phae.proj..510W

June 9, 1890.

W. again looked for Deimos, saw it very many times in the same position with the same eye-piece as before. W. then tried power of 350 (the
11 2 old eye-piece used in former observations on the satellites) Deimos certainly seen with this & quite steadily in the same position as before.

Comet 1889 I. St. obs.

17	⊽1	⊀⊿	−6	⊽⊀
	−1	⊀⊽		
17	⊽0	3.		

17	⊀⊽	−6.1	
16	35		
−1	10	Pos for	90 ⊀⊽ / ⊽⊽

11 2⊽ Comet suspected but not certainly seen

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1890phae.proj..51OW

June 9, 1890.

Comet a 1890 (Brooks Mar. 19) Tr. Obs.

1h	2	√-1	+63	√4
	-1	40		
1h	7	11		

1h	14	+6 K, K
17	3	
-1	11	

Pos Jno 332.9
450
Setting 377.9

17	3	41.0	
	3	59.1	
17	5	37.0	*
	5	53.0	∝
	6	38.5	∝
	7	13.6	*
	7	44.5	
	7	59.6	
	8	44.5	
	9	21.0	

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1890phae.proj..510W

June 9 1890.

17	9	51.5
	10	6.5
	10	50.6
	11	28.0
	11	48.0
	12	2.2
	12	45.7
	13	24.5
	13	46.4
	14	1.5
	14	42.9
	15	23.9

Order in preceding transits, star, comet, comet, star. Comet in northern half.
12h00m Star in southern.

Comparison star = DM +63°1408 (8.6 L)

Fr. 3451

17	23	3.5	12	3	0.0
	24	3.7		4	0.0

∴ Fr. 3451 is 9 25.4 slow.

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1890phae.proj..510W

June 10. 1890.

7 10 Cloudy.

8 0 Still cloudy.

8 45 Now somewhat clearer.

Circumpolar Variables.
Means of Comparison Stars.
R Lyncis. Fr. obs.
Grades means of comp. Stars.

6 49 +++.0
14 33
+7 44

Too low
R Urs. Maj.
10 33 +69.3
14 35
+4 2

10 39 +65.9
14 47
+4 8

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1890phae.proj..510W

June 10, 1890.

Seeing 7, 6, 5

a

9:23	5.90	5.77	
	578	5.71	34.65
	5.79	5.70	7.51

b

5.71	5.46	
5.52	5.70	
5.60	5.68	33.67
		7.30

c

5.09	5.10	
5.01	500	
5.01	4.98	30.19
		6.55

d

4.50	4.72	
4.68	4.82	
4.73	5.00	28.45
		6.17

e

4.68	4.58	
4.77	4.78	
4.79	4.57	28.17
		6.10

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1890phae.proj..510W

June 10, 1890.

f

3.91	4.25	
3.82	4.27	
4.07	4.44	24.76
		5.37

g

3.50	3.78	
3.38	3.90	
3.54	3.81	21.91
		4.76

h

3.51	3.44	
3.50	3.71	
3.75	3.39	21.30
		4.62

k

3.11	3.27	
3.07	3.11	
3.48	3.18	19.22
		4.17

i

2.60	2.81	
2.90	2.67	
2.81	2.87	16.66
		3.61

R

5.10	5.17	
5.12	5.05	30.64
5.00	5.20	6.65

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1890phae.proj...510W

June 10, 1890.

k

2.39	2.58	
2.68	262	
260	272	16.19
		3.51

L

208	225	
214	240	
231	232	13.50
		2.93

m

1.78	1.77	
1.60	1.82	
1.70	1.80	10.47
		2.26

10 38

6 other stars too faint for wedge.

b 1.5 R 2.5 C in finder

b 1 R 3 C in large telescope

6 sts 7.0

Too late for farther measurements so looked for comet on next page.

Seeing 6, 7, 6.

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1890phae.proj..51ow

June 10, 1890.

Comet e 1888 (1889 I)

17 ~~4r~~ −6.0
16 20
− 1 25

Pos Zero 153.8
45
Setting 198.8

Comet found.

~~44~~ 47.5
44 59.5 +1 = 59.6
45 22.8
~~45~~ 27.0

16 46 43.5 E
46 54.5 *
47 11.8 *
47 29.5 E

~~10.6~~
48 40.0
48 50.9
49 8.0
49 26.1

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1890phae.proj..510W

June 10, 1890.

49	47.2
49	58.4
50	15.4
50	32.9 +1 = 33.0
51	1.4
51	11.3
51	29.0
51	46.4
52	48.1
52	58.8
53	15.2 +1 = 15.3
53	33.4
~~53~~	56.9
54	7.8
54	25.1 −1 = 25.0
54	42.2
~~55~~ ~~50~~	58.3 +1 = 58.4
~~56~~ ~~51~~	10.0
~~56~~ ~~54~~	26.8 +2 = 27.0
56	44.0 +1 = 44.1
~~57~~	23.8
~~57~~ ~~58~~	34.0
~~57~~	51.4
58	8.4

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1890phae.proj..51ow

June 10, 1890.

	58	30.5
	58	41.5
	58	58.8
	59	15.9
17	0	13.4
	0	25.1 − 1 = 25.0
	0	42.0 − 1 = 41.9
	0	58.8
	1	50.1
	2	1.4
	2	18.7
	2	35.4

Order in preceding transits comet, or star, star, comet / Comet in northern half. Star in southern

11 40

Comp. Star = S.D. −7° 45′ 32 (9.4 M6)

Comet exceedingly faint.

Fr. 3451.

17	17	53.9	11	44	0.0
	18	54.0		45	0.0

∴ Fr. 3451 is 29.9 fast.

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1890phae.proj..510W

June 11, 1890.

7 10 Cloudy.

2 0 Still cloudy.

9 10 Still cloudy with some light rain at intervals.

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1890phae.proj..510W

June 15-1890

Ballon 103 $11^h\ 47^m\ 0^s.0 - 48^m\ 0^s.0$

B+C 1182 45 45.0 46 45.0

$12^h\ 6^m\ 18.3$

$8\ \ 12.0$

$12^h\ 14^m\ 30.3$

$-1\ \ 15.0$

$12^h\ 13^m\ 15^s.3$

Disappearance of satellite II of Jupiter compared with satellite III

Photometer R - S. obs. D. sec.

$5^h\ 8^m\ 33^s.5$ Ready - no significance

11^h	58^m	$52^s.5$	136.3
	59	33.5	208.3
12^h	0	7.5	136.2 1
	0	28.5	212.5
	0	49.0	134.0
	1	19.0	211.8
	1	44.5	133.8 2
	2	3.5	212.2
	2	22.5	133.9
	2	37.0	210.7
	2	53.5	138.0 3
	3	10.0	216.1
	3	23.5	140.1
		34.5	213.6
		58.0	134.0 4
	4	9.0	213.3
		22.5	133.8
		38.5	212.1 5
		49.5	132.2
	5	2.5	215.0
		14.5	134.1

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1890phae.proj..510W

June 15 - 1890

$12^h\ 5^m$	28.5	213.8	
	47.5	132.0	6
6	3.5	211.3	
	19.5	134.2	
	37.0	208.9	7
	50.5	134.0	
7	2.5	212.8	
	29.5	137.1	
	44.5	212.7	
8	1.5	135.0	
	18.0	211.6	
	38.5	136.2	
	51.5	211.7	
9	42.0	136.5	9
	53.0	209.0	
10	2.5	137.8	
	14.5	212.5	10
	25.0	139.9	
	35.5	210.7	
	44.5	140.0	
	54.0	213.5	
11	6.5	143.0	
	19.5	207.9	
	30.0	145.2	
	39.5	201.8	
	52.5	146.8	
12	4.5	203	
	14.0	149.9	
	19.5	201.0	
	34.0	160.1	
	44.0	196.0	

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1890phae.proj..stew

June 15-1890

12^h	12	55,0	158.3
	13	45	193.0
		15,0	160.8
		25,5	189.3
		39,5	167.2
		50,5	185.1
	14^m	5,5	Suspected

Limit of visibility.

14	31,5	165.9
	52,5	187.7
15	11,5	168.5
	28,5	185.3

Balloon 103	12^h	22^m	$0^s,0$ –	23^m $0^s,0$
B.T 6, 1182		20	44,5 –	44.5

Balloon 103 is 2.0 secs. slow of B. 394.
by comparison.
∴ Correction to reduce the above times to Greem. M. T. is $+5^h$ 0^m 2.0

1890phae.proj..510W

June 16. 1890.

Strong Twilight

Doubtful ~~to~~ Ver. Circle cases for settlement with Equatorial. Gr. Obs.

+ 2° 30 6 and 30 9

21	6	+2.2
13	46	
-8	10	

No stars visible. Twilight still strong.

21	56
14	5
-7	51

3056 precedes # 3059 45 sec. as by D M. but is 7" south instead of 9.6 as by DM. A 9.2 mag. follows # 3056 21 sec. 1' north. A 9.5 follows the last star 37 sec. 1' north. ~~These are all the stars~~ A 9.5 precedes 3056 22 sec. 2.5 south.

Pos 1 yes. 1336
45
Setting 178.6

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1890phae.proj..510W

June 16, 1890.

14	23	15.5	3056
	24	19.6	59
	24	29.2	56
	24	55.0	59
	25	31.4	
	26	35.2	
	26	44.9	
	27	10.1	
	27	38.1	
	28	42.0	
	28	52.0	
	29	16.8	
	29	48.5	
	30	53.0	
	31	2.0	
	31	27.4	
	31	57.0	
	33	0.0	
	33	9.7	
	33	36.0	

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1890phae.proj..510W

June 16, 1890.

Order in preceding transits 3056, 3059, 3056, 3059. 3056 in southern half. 3059 in northern. Star not double.

Circumpolar Variables. Sh. obs.

R Aurigæ.

5	3	+ 53.0
14	40	
+ 9	37	

8 51 Seeing 8.5.6 At this altitude

8 57 g 2.5 R 2 h in large telescope
g ~~3~~ R 2 h in finder

Est. 9.4

R Lyncis.

6	+ 9	+ 55.0
14	55	
8	6	

9 06 d 2 R 2.5 e in finder
d 2.5 R 3 e in large telescope

Est. 8.9

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1890phae.proj..510W

June 16, 1890.

R Ursæ Majoris

10 32 +69.3
15 4

4 32

9 25 b 5 R 3 c in large telescope
b 4 R 3 c in finder

Est. 7.4

T Ursæ Majoris

12 33 +60.4
15 25

2 52

9 44 b 1 T 5 c in finder
b 1.5 T 4 c in large telescope

Est. 7.5

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1890phae.proj..510W

June 16, 1890.

S Ursae Maj.

12 33 +61.7
15 42
+ 3 9

10
9 4 e 5 S 2 f in finder
e 6 S 2 f in large telescope

Est. 9.4

Relative estimate on star "é"
e 4 é 3.5 f in finder
e 4 é 4 f in large telescope

~~Est.~~

Re-comparison of S Urs. Maj.

é 3 S 2 f in finder
10 10 é 3 S 1 f in large telescope

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1890phae.proj..510W

June 16, 1890.

α Boötis.

14	17	+v4.2
16	8	
+1	51	

10 18 $\mathcal{C}$ 1.5 S 2 m in large telescope
Too faint for finder

Est. 13.5

β Camelop.

14	40	+Δ4.1
16	18	
+1	38	

10 35 C 3.5 R 3 $\overset{d}{=}$ in finder
C 4 R 3 $\overset{d}{=}$ in large telescope.

Est 9.4

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1890phae.proj...510w

June 16, 1890.

~~S~~ R ## Urs. Min.

16 3 ~~4~~ +72.9
16 40
+ 6

10 53 C 2.5 R 1.5 d in finder
C 1 R 3 d in large telescope

Est. 9.3

R Draconis.

16 26 +67.4
16 52
+ 26

11 03 C 2 R 2 m in large telescope
Too ft. for finder

Est. 13.1

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1890phae.proj..510W

June 18. 1890.

Doubtful Cases with Mer. Circle. Stoh.

+r−0° 3r06 and 3502

21	37	+r−0.r
13	55	
−7	42	

21	37
14	13
−7	24

Pos Zero 201.1
450
Setting 246.1

14	30	10.5	3502
	30	18.5	3506
	30	38.5	02
	31	21.6	06
	31	47.1	
	31	55.4	
	32	14.6	
	32	58.1	
	33	29.5	
	33	38.0	
	33	56.8	
	34	40.3	

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1890phae.proj..5tow

June 18, 1890.

14	35	$\frac{1}{2}$7.1
	35	56
	35	34.1
	36	17.9
	36	52.0
	36	59.5
	37	18.4
	38	1.6

Order in preceding transits 3502, 3506, 3502, 3506. Both in southern half.

~~There is a faint star (10.5 mag.) in same R.A~~

Star not double, no other star near it.

Circumpolar Variables. Yr. obs.

S Cygni.

20	2	+v7.2
14	47	
−5	21	

~~M = m = 5 in. large telescope~~

See next page.

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1890phae.proj..510W

June 18, 1890.

Con. from previous page.

9 3 m 0.5 S 3.5 n in large tel
too faint for finder

Est. 12.3

Slight amount of twilight still in sky.

T Cephei.

21	6	+67.7
15	10	
− 5	56	

9 27 c 5 T 3 d in finder
c 5 T 3 d in large telescope

Est. 6.6

S Cephei.

21	37	+72.4
15	32	
− 6	5	

Con. on next page.

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1890phae.proj..510W

June 18, 1890.

Corr. from previous page.

q 40 l 3 S 2 f in large telescope
Same in finder

Est 11.4

R Cassiop.

23 r 2 +69.7
15 48
-8 4

q 55 n 3.5 R 10 in large telescope.
Rather too ft for finder

Est. 10.8

1 T Cassiop.

0 17 +55.9
16 00
15 43

10 7 f 2 T 3 g in large telescope
f 3 T 2 g in finder

Est. 8.7

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1890phae.proj...510W

June 18, 1890.

γ Cassiop.

1 10 +72.1
16 12
15 2

10 24 R 4 p 4 S 1 q in large telescope
too faint for finder

Est. 13.3

κ Persei.

2 2 +57.2
16 28
14 20

~~10 38~~ ~~g 4 S 3 h in large tel.~~
~~g 3 S 2.5 h in finder~~

~~Est.~~

10 43 g $\frac{2.5}{2}$ S 3 h in large telescope
g = S in finder

Est. 10.1

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1890phae.proj..510W

June 18, 1890.

T Persei

10 50 c 3 T 4 d in large telescope
Same in finder

Est. 8.9

Doubtful cases with Mer. Circle. Gr. do.

+ 53° 2420 and 2868

22 20 +r 3,1
16 55
5 25

Poz Zero 248.1
45.0
Setting 293.1

17 4 21.6 68
4 39.8 70
5 12.5 68
5 17.5 70

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1890phae.proj..510W

June 18, 1890.

14	5	59.2
	6	17.2
	6	50.0
	6	55.2
	7	37.1
	7	55.2
	8	28.2
	8	33.2
	9	18.0
	9	36.1
	10	8.5
	10	43.9
~~11~~		30.0
	6	~~47.8~~
	13	5.2
	13	23.1
	13	57.5
	14	2.6

Order in preceding transits 2868, 2870, 2868, 2870. Both in northern half.

11 12 Star not double. No star sufficiently near to be confounded with it.

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1890phae.proj..510W

June 19. 1890.

Doubtful cases with Iver. Circle.
Settlement of same. Fr. obs.

+53° 2476 and 2874

22	18	+51.5
13	57	
−8	21	

22	18
14	13
−8	5

293.0
45.0
Setting 338.0

8 19 Seeing 8.6.7

14	27	22.8	76
	27	42.0	74
	28	3.1	74
	28	37.0	76
	29	2.0	
	29	21.4	
	29	42.3	
	30	16.5	

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1890phae.proj..510W

June 19, 1890.

Clouds

22 18
16 4
— 6 14

10 15 Still cloudy with no prospect of clearing

In the two preceding sets of transits the order was 2476. 2474. 2474. 2476.
No. 2476 in northern half and 2474 in southern half.

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1890phae.proj..510W

June 20. 1890.

Settlement of doubtful cases with the Iner. Circle. Sr. obs.

+ν−0° 3770 and 3788 and 3789

22	32	+ν−0.4
14	10	
− 8	22	

Setting 293.1
45
Setting 338.1

8 10 Seeing 8.7.7

14	23	58.9	70
	24	30.7	78
	26	20.0	88
	26	52.7	89
	27	21.5	89
	27	30.2	88
	28	18.7	
	28	49.1	
	30	39.4	
	31	12.4	
	31	40.1	
	31	49.1	

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1890phae.proj..510W

June 20, 1890.

32	30.4
33	0.0
34	51.0
35	24.5
35	51.2
35	59.8
36	39.3
37	7.5
39	0.0
39	33.1
39	58.6
40	7.5
40	45.0
41	11.6
43	5.5
43	38.6
44	2.5
44	11.6

Order in preceding transits 3770, 3770, 3788, 3789, 3789, 3788. All in southern half.

Twilight still strong

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1890phae.proj..510W

June 20, 1890.

Comp. Stars for Argelander
Variables. Relative Estimate. Fr. obs.

S Cygni.

20 α +57.2

14 55

−5 13

20 8

15 20

−4 48

8 59

a 5 b
b 4 c
c 4 d
d 3 e
e 6 f
f 5.5 f,g
g 4 h
h 2.5 i
i 3 j
j 5 k
k 3.5 l
l 5.5 m
m 4 n
n 2.5 o
o 4 p

q 35

l 3 & 1.5 m in large telescope
Too faint for finder.
Est 13.0

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1890phae.proj..510W

June 20, 1890.

R Cassiop. Gr. obs.

9 58

23 v 2 +49.7
15 55
-7 57

23 33
16 10
-7 23

a 4 b
b 3 c
c 6 d
d 7.5 e
e 7 f
f 3.5 g
g 7 h
h 5 i
i 5.5 j
j 4 k
k 5 l
l 4 2.5 m
m 3 n
n 3 o
o 3 p
p 4 q
q 5 r
r 5.5 s

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1890phae.proj..510W

June 20, 1890.

10 40 n 3.5 R 20 in large telescope
too ft for finder

Est. 10.9

Too late for another set of relative estimates.

Doubtful cases with mer. Circle. Sr. obs.

22 32 +50.9
17 00
−5 32

+52 3263 and 3257

Pos Zero 355.9
45
Setting 310.9

17	13	22.1	~~13~~	57
	13	48.4		57
	15	19.0		63
	15	42p		63

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1890phae.proj..510W

June 20, 1890.

17	16	17.2
	16	44.4
	18	15.0
	18	36.1
	19	9.0
	19	35.5
	21	6.0
	21	28.7
	22	24.0
	22	51.0
	24	21.6
	24	43.2
	25	42.2
	26	8.0
	27	39.0
	28	2.2

Order in preceding transits 3257, 3257, 3263, 3263. 3257 in southern half. 3263 in northern.

11 16 Star not double. Nearest star to one in Equation is 3262

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1890phae..proj...510W

June 2 v. 1890.

Doubtful Cases with ver. Circle. Fr. ob.

~~+v 2° 3263 and~~

+v 2° 3340 and 3331

22 v 3 +v 1.9
14 33
- 8 20

356.9
45.0
401.9
360
41.9

Clouds

15 5 31.4
Clouds

still cloudy

15 16 24 31
16 57.0 31
18 9.5 40
19 25.7 40

20 10.1
21 3.9
~~22~~ 17.0
23 33.6

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1890phae.proj..510W

June 25, 1890.

15	24	12.8	31
	25	5.6	31
	26	18.0	40
	27	36.0	40
	28	27.0	
	29	19.0	
	30	31.5	
	31	50.1	
	32	35.8	
	33	27.0	
	34	39.8	
	35	59.1	

Order in preceding transits
3331, 3331, 3340, 3340 / 3331 in southern half. 3340 in northern.

Dm. +30° 3609 (Thought by photograph to have bright lines.) Fr. Obs.

+.

19	34	+29.9
15	52	
— 3	42	

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1890phae.proj...510W

June, 25, 1890.

Star has bright lines

Clouds.

Three bright lines easily visible
One quite bright one about ch. the yellow
Another, somewhat fainter, in the red,
and another, fainter still, in the
violet. Several more thought to be
seen between the ~~two~~ two in the yellow
and the violet, but not as strongly
marked

Star examined with various
powers but without prism attached
and no additional peculiarity noted.
Star not certainly noted as nebulous

- The same appearances as above
described, noted by P.

Comps. Stars for Circumpolar
Variables. Tr. 0h.

ν Cygni.

20 4 +57.2
16 40

-3 28

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1890phae.proj..510W

June 25, 1890.

S Cygni. con.

a 5 b
b 5 c
c 4 d
d 4 e
e 5.5 f
~~f 7 g~~ f 4 f'
~~g 4 h~~ f' 4 g
~~g~~ 4.5 h
h 2.5 i
i 3 g
~~j 3 f~~
~~j' 2.5 k~~
j 5.5 k
k 2 l
l 4.5 m
m 4 n
n 3 o
o 4.5 p

1937 m 4 S 1.5 m in large telescope
For pt for finder

Est. 135

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1890phae.proj..510w

June 25, 1890.

Comet a 1890 (Brooks Jan. 19). Obs.

Comet 1890 II.

1h	21	57	+64	6	
	−2	57		+2	
1h	19	0	+64	1	

1h 20 +63.9

17 20

+2 00

Jeaco 38.8

45-0

Setting 83.8

17	31	48.5	∈
	32	39.7	∈
	34	16.5	✕
	34	39.0	✕
	35	11.1	
	36	1.6	
	37	40.1	
	38	29	
	38	35.4	
	39	27.5	
	41	5.5	
	41	30.2	

90
1h 1h
1 1h

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1890phae.proj..510W

June 25, 1890.

42	7.0	≡
42	58.7	≡
44	37.5	*
45	3.65	*

~~4~~ ~~3.9~~ Rej. 12th comet
~~46~~ ~~34.8~~ reading wrong.
~~48~~ ~~15.2~~
~~46~~ ~~41.0~~

Order in preceding transits
comet, comet, star, star.
Comet in southern half inside.
Star in northern half outside.

Comet = to a 9.5 mag. star Tail visible
for ~~4'2~~ 0.5° Comet pretty well con-
densed but not quite stellar.
Diameter of total nebulosity 2'.

11 21 Comparason Star = DM +64°. 1067 (G.O.)

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June 25. 1890.

	Fr. 34 Vi.		B. 394.	
17	57	13.1	11 25	0.0
	Vb	13.4	26	0.0

1890phae.proj..510W

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1890phae.proj..510W

June 27. 1890.

Somewhat cloudy.

Settlement of doubtful cases with Micr. Circle. H. C. Co.

+V4° 2972 and 2969

23	20
16	15
7	5

+V4.1

Pos. Zero 56.0
45.0
101.0

Seeing 7, 8, 6

9h 50

16h	31	26.1	2969
	32	15.6	69
	32	38.7	72
	33	11.2	72
	33	41.2	
	34	29.8	
	34	53.6	
	35	25.2	
	35	59.5	
	36	48.7	

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1890phae.proj..510W

June 27, 1890.

16^h	37	12.0
	37	44.2
	38	21.4
	39	10.0
	39	33.8
	40	6.0
	40	32.5
	41	21.5
	41	45.0
	42	17.0

Order in preceding transits 2969, 2969; 2972 2972. Both in north half. Star not double preceding star to 2972, is 2973.

Dm + 49° 4126 and 4123

23 32	+49.6
16 48	
6 44	

Cloudy in this region.

1155 Now clear.

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1890phae.proj..510W

June 27 1890

$11^h\ 02$ 17^h

41	29.0	4123
42	12.5	4126
42	18.5	4123
42	28.8	4126
42	59.1	
43	41.0	
43	47.2	
43	59.5	
44	22.0	
45	4.0	
45	10.2	
45	21.7	
45	46.0	
46	28.5	
46	34.0	
46	46.0	
47	19.5	
48	1.2	
48	7.5	
48	19.0	

Order in pred. transits = 4123 4126

11 10 4123 4126 4123 in S half. 4126 in N. half. Transits taken through varying clouds. On last set clouds thicker and transits somewhat more uncertain

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1890phae.proj..510W

June 24. 1890.

Doubtful cases with Mer. Circle. H. obs.

+54° 2945 and 2979

23 23 +54.4

Pos. Zero 56.0
45.0
101.0

8h 32 Seeing 8, 6, 7

15h

15	11.0	79
16	0.5	85
16	18.5	79
17	18.6	85
17	54.0	
18	56.6	
19	14.6	
20	2.0	
~~20~~	~~28.8~~	
21	53.2	
22	53.5	
23	12.0	
24	1.2	

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1890phae.proj..51OW

June 28, 1890.

24	26.2
25	27.5
25	45.8
26	34.8

~~27~~	~~43~~
28	4.6
~~28~~	23.0

28	58.9
29	58.8
30	17.2
31	6.8

Order in preceding transits 2979 2985, 2979 2985. 2979 in South, 2985 in north half.

This star is not double. a 9.7 precedes it 17°, 0.8 n. a 10.7 mag als precedes 2°, 1.0 s. No other stars near.

Circumpolar Variables, Nr. obs.

2478 R Lyncis.

6 K9 +55.0

15 45

1890phae.proj..510W

June 28, 1890.

d 3.5 R 2 ℓ in large tel.
d 3 R 1 ℓ in finder.

9 20 Est 8.9

3825 ~~53~~ R Ms. May.

10 32 +69.3
16 6
5 34

9h 36 b 5 R 2 C in finder
b 6 R 2 C in large tel.

Est. 7.3

4 ∨ 11 T Ms. May.
12 33 +60.4
16 23
3 50

9 44 C 2.5 T 5 d in finder.
Same - - - in large tel.

Est 7.9

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1890phae.proj..stew

June 28, 1890.

4557 δ Ursæ Maj

12 33 618
16 30

9^h 32 g 3.5 δ 2.5 h in large tel
g 3 δ 2 h in finder

Est 10.3.

5157 δ Bootis

14 16 +54.5
16 40
2 24

10^h 05 k 3.5 δ 2.5 l in large tel
too ft. for finder

Est 12.8

5190 R Camelop.

14 40 +84.1
16 50
2 10

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1890phae.proj..510W

June 28 1890

R = d in finder
C' 3.5 R 2 d in large tel
Est 9.8

C 5.5 C' 4 d in large tel,
C 4 C' 4 d in finder
"C'" inserted between C and d as interval between them was rather large.

5948 R Mrs Swift

16 34 +72.9
17 12
0 38

10h 32 "C" 3.5 R 1 "d" in finder
"C" 3 R 2 "d" in large tel

Est 9.3

5955 R Draconis

16 26 +67.4
17 18
0 52

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1890phae.proj..51ow

June 28, 1890.

$10^h\ 42$ + 2.5 R 2.5 L in long tel
too ft for finder

Est. 13.0

7220 δ Cygni

20 08 +57.1
17 30
2 38

$10^h\ 58$ "m" 3 & 1 "n" in long tel
too ft for finder

Est 13.3

11 3 Seeing 7. 7. 7.

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1890phae.proj..510w

June 30. 1890.

Doubtful cases with Lucr. Crich. Hrvth.

~~+v K° 29 v~~ and
+51° 3639
~~+v 0° Kov K~~ and 3640

23	26	+v 1.7
15	26	
8	22	
	0	

Pos. Prec. 97.5
45.0
142.5

15	34	3.1	39
	34	51.2	40
	35	6.2	39
	35	18.7	40
	35	45.3	
	36	33.4	
	36	48.8	
	37	2.0	
	37	28.0	
	38	15.5	
	38	31.2	
	38	44.0	

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1890phae.proj..51OW

June 30, 1890.

15h	39	19.8
	40	6.0
	40	21.3
	40	36.2
	41	1.0
	41	46.8
	42	2.5
	42	16.9

Sadr in prec. transits 3639, 3649, 3639, 3640 3639 in south, 3640 in north half. Star not double. No other star near 3639 is 0.4 mag. ftr. than 3640, although both same mag by Dm.

Circumpolar Variables. Fr. obs.

T Cephei.

21	6	+67.7
15	50	
5	16	

9h 23 "C" 4 T 3.5 "d" in finder
same "large tel.

Est 6.5

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1890phae.proj..510W

June 30, 1890.

δ Cepher

21 37 +78.3
16 20
5 17

9h 35 "h" 1.5 of 2.5 "h" in large tel
same in finder.

Est 10.7

R Cassiop.

23 51 +49.8
16 30
7 21

9 48 # "n" 3 R 1.5 "o" in large tel.
too ft for finder

Est 11.6

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1890phae.proj..510W

June 30 1890

δ Cassiop

δ 19 +55.9
16 40
7 39

9h 55

"f" 3 R 1.5 "g" in large tel
"f" 3 R 2 "g" in finder.
Est 8.6 ~~8.7~~

ν Persei.

2 4 +57.2
17 6
14 54
9 2

e 4 N 3 f in large telescope.
e 4.5 N 3 f in finder.
Est. 9.7

10 27

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1890phae.proj..510W

June 30. 1890.

ι Persei.

c 4 I 3 d in large telescope.
c 3.r I 3 d in finder.

10 36 Est. 4.9

R Aurigae.

5 3 +53.0
17 42
12 39

11 10 f 2.r I 3 g in large telescope.
too ft and low for finder

Est 9.3

Comet a 1890 (Brooks Nov 19)

14 47 +61.9
18 10
3 28

3 41
14 21
17 40

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1890phae.proj..510W

June 30. 1890.

Pos. Zero 10v.4
4v. 0
1v 0.4

1h	34	v4.0	*
	36	20.2	*
	38	49.0	∈
	39	v4.v	∈
	~~3h~~		
	40	34.4	
	42	3.0	
	44	24.9	
	4v	34.8	
	46	19.9	
	47	44.6	
	50	8.1	
	v1	1v.v	
	51	51.4	
	53	17.v	
	vv	38.9	
	56	46.0	

Order in preceding transits, star, star, comet, comet. Star in Southern half and comet in northern half.

Comp. Star = 2 m. +61° 1451 (6.0 A.)

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1890phae.proj..510W

June 30. 1890.

Dès. Jup. I. Comp. with Sat. preceding.

Phot. H.			P. obs. Gr. rec.		
B. + C. 1142.			B. 394.		
12	14	3 v.v	12	16	0.0
	15	3 v.v		17	0.0

Comp. with Sat. III.

12	20	16.v	207.3
		24.0	243.4
		41.0	20 v.2
		v0.0	24 4.3
21		1.0	207.4
		12.0	243.4
		19.v	206.7
		27.0	242.v
		37.v	207.4
		44.v	242.1
		v9.v	204.v
22		9.0	241.9
		20.v	210.4
		29.0	241.2
		37.v	211.v
		44.v	240.2

←

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1890phae.proj..510W

June 30. 1890.

23	V-2.0	211.3
24	0.0	242.2
	10.0	212.4
	20.0	240.4
	30.0	213.4
	39.0	279.7
	V0.0	21V.4
25	2.0	273.0
	13.0	220.7
	19.0	266.4
	31.0	223.7
	37.0	267.3
	4V.0	224.6
	V1V	263.4
26	0.0	230.1
	7.0	2V9.4
	16.0	234.9
	24.0	2V7.4
	34.0	239.4

Limit of Vis.

36	9.0	237.2
	23.V	2V2.4
	3V.V	234.7
	46.0	2V3.6

Seeing unusually good,

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1890phae.proj.510w

June 30. 1890.

B. & C. 1142.

12	34	3V.2	
	3V	3V.2	

B. 394.

12	36	0.0	
	37	0.0	

Fr. 3V1.

19	30	54.V	
	31	54.6	

B. 394.

12	39	0.0	
	40	0.0	

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1890phae.proj..510W

July 1. 1890.

Doubtful cases with Mer. Circle. To obs.

+49° 4141 and 4141

23 3m +49.7

16 12

7 20

Pos Zero = 147.4
45.0
192.4

9h 27

Seeing 6.7.

16h 23 21.4 4141
23 44.6 45
24 15.0 41
24 26.2 45

24 51.2
25 14.5
25 45.0
25 56.0

26 19.4
26 43.1
27 13.2
27 24.3

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1890phae.proj..510w

July 1, 1890.

28	2.3
28	26.0
28	56.0
29	6.9
29	33.2
29	57.4
30	27.5
30	38.0

Order in prec. transits 4141, 4145, 4141 4145, 4141 in north, 4145 in south half This star is not doubly no other star near it.

+52 3480 and 3482

23 36 +51.1
16 36
7 0

16^h

43	49.1	80
44	3.5	82
44	27.4	80
45	6.1	82

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1890phae.proj..510W

July 1, 1890.

16h	45	33.0
	45	47.6
	46	11.6
	46	50.1
	47	14.1
	47	28.5
	47	52.9
	48	31.5
	49	5.4
	49	19.6
	49	48.4
	50	27.5
	50	57.7
	51	12.5
	51	41.0
	52	19.8

Order inferred transits 3480., 3482, 3480, 3482, Both in north half.

Star 3480 has a ftn. * in about the same R.A. 1′ south. Est mag of ftn *, = 10.2

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1890phae.proj..510W

July 1, 1890.

+50 40 91 and 4089

23 28 +50.5
116 56
6 32

17	8	46.4	89
	8	56.8	91
	9	20.0	91
	9	27.8	89
	9	53.4	
	10	3.5	
	10	28.8	
	10	36.5	
	10	59.5	
	11	9.8	
	11	34.5	
	11	42.5	
	12	5.0	
	12	15.1	
	12	40.0	
	12	48.4	

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1890phae.proj..51ow

July 1, 1890.

17h	13	13.5
	13	23.5
	13	49.0
	13	56.0

Order in prec. transits 4089, 4091
4091 4089 Both in south half
This star is a coarse double but * taken in transit is evidently the one wanted. Comp * is 0.3 mag ftr, pred. 1 sec. and is 0.4 south.
There is a still ftr. * pred. comp * a few secs. 0.6 south of it, but this latter is probably too ftr. to occasion confusion

Circumpolar Variables. Gr. No.

S Cassiop.

1	10	+72.1
17	20	
17	50	

Var. susp. but not certainly seen. Too ftr. for est.
Sky quite cloudy.

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1890phae.proj...510W

July 1. 1890.

Comet a 1890 Brooks (Mar 19) Wash.

14	41	+61 21
17	36	
2	55	

10h ☓ 50

Windlass hits guide from cannon balls being disarranged, so that dome can not be turned to desired point. Sky now quite thick. Comet could not probably be taken

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1890phae.proj..510W

July 5, 1890

Doubtful cases with Iver. Circle. Fr. obs.
2 h. +v-0° 40 v E and 4048

≠

23	16	+v-0.2
~~15~~	~~36~~	
~~5~~	~~56~~	
7	40	

8 30

Spring 9, 7, 6

Pos Zero 153.6
45.0
208.6

15h

46	43.0	48
47	17.9	48
47	45.5	54
48	29.0	54
54	40.5	
55	17.0	
55	44.6	
56	25.8	
56	58.7	
57	35.5	
58	3.2	
58	44.4	

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1890phae.proj..51ow

July 5, 1890.

15h	59	22.0
16h	0	0.0
	0	27.4
	1	7.5
	1	33.9
	2	12.5
	2	39.7
	3	19.7

Order in free. transits 4048, 4048, 4054, 4054. 4048 in north, 4054 in south half.

There are several 9. 5mag. stars about here but none so near that they should be confounded with stars in question. a 9.5 foll. 4054 28 secs same Dec. There are 2 *s slightly fainter than 4054 in about same R.A. one 4' north, other 6' north of it. These are the nearest stars to 4054 4054 is ~~*~~ double, but comp. is very much fainter than prim. comp. also slightly north, so much fainter than prim. comp. that it was not seen at first and ought not to give any trouble.

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1890phae.proj..stow

July 5, 1890.

Circumpolar Variables. Hr. 16.

δ Cassiop.

1 10 +72.1

16 17

8 53

9h 16

V = 9 in large Tel
too ft. for finders

Est 13.5

Comp. Stars for Circumpolar Var. Hr. 16,
Relative Estimates.

Nova. Maj. Dome will not go by.

δ Cygni.

20 δ +45.3

16 36

3 30

a 5 b
b 4.5 c
c 4 d
d 3.5 e

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1890phate.proj..510w

July 5 1890

e 6 f
~~f 5 g~~
f 3 f'
f' 3.5 g
g 4.5 h
h 3.5 i
i 3 j
j 5 k
k 2.5 l
l 3.5 m
m 4 n
n 3 o
o 3.5 p

10 20 ~~A~~ 02 ~~f~~ 2p in large tel. too ft for finder

D=073.8

10 40 On turning dome one of the guides twisted and partly broke. Prob. rather hazardous to turn dome farther.

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1890phae.proj..510W

July 7. 1890.

Tried to turn dome but the broken guide catches, and there seems to be danger of breaking the other bolt which holds it. As it seems to be coming up cloudy and there is already considerable cloud over the sky, probably it is best not to attempt it.

No stars visible at 8h 45m. Sky wholly cloudy.

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1890phae.proj..slow

July 4. 1890.

Doubtful cases with micr. Circle. Fr. obs.

~~+V Co~~

+V E° 3044 and 3087 and 3081

23	V 1	+V V. 0
17.5	28	
8	23	

Pos. Geo. 223.4
45
268.4

Setting

8h 26 Seeing 7, 5, 6

15	48	44.5	81
	49	18.8	87
	49	29.0	88
	49	44.6	81
	50	31.7	87
	50	38.2	88
	51	14.0	
	51	49.0	
	51	59.1	
	52	14.5	
	53	1.5	
	53	7.7	

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1890phae.proj..510W

July 8, 1890.

53	49.9
54	25.5
54	35.9
54	51.0
55	37.5
55	43.7
56	36.0
57	12.5
57	22.5
57	37.8
58	23.8
58	36.0
59	16.6
59	53.5
16h 0	3.4
0	18.9
1	4.4
1	10.4

Ordinary pree. transits 3081, 3087 3088 3081 3087 3088 3081 in north, 3087 and 3088 in south half.

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1890phae.proj...510w

July 4. 1890.

Object susp. ~~by~~ Swift's of being a Comet.

16 6 +10.0
16 33
0 27

16 1 +10.3
16 44
43

16 6 16" +10 13.7"
−0 14 +0.4
~~+4.0~~
~~16 5 4 +10 17.7~~
Adv. 16 6 2 +10 14.1

14+0
1
2

4 | +2.6. −9.1−0.
+7.2. −3.4.
14.30
47.50

N.G.C. 608 found in position and corresponding with description given. There is known no comet in position given by Swift, and thorough Search made in this region but no comet found.

10 50

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1890phae.proj..51ow

July 8 1890

Too late to start on comp. Stars
as clouds move hard and slowly.

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1890phae.proj..5low

July 9. 1890.

Doubtful cases with Equat. Circle. W. obs.

~~+5° 4090 and~~
+5° 4090, star a, and 4094.

23	24	+5.5
16	2	
-7	26	

A star about the same magnitude precedes star 4090. 3^s ~~4^s~~ 1.5 north

Another star preceded star 4090 12^s 2′ north

Another star preceded 4090 a 4^s 2′ north

All these stars are about the same magnitude as 4093.

A somewhat fainter star preceded 4090 6.2^{xs} 2′ south of it

There is a faint star in the same R.A. as 4090 .8′ south of it.

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1890phae.proj..510W

Wednesday July 9. 1890.

There seems to be no doubt as to what 4090 is, from its position, as being slightly brighter than the rest, although these others are not far distant.

Pos. Zero. 246.5
4 5.0
Setting. 331.5

~~16 33 31.5~~
~~38 41.0~~

16	34	38.0	a
	34	49.0	4090
	35	8.5	4090
	35	10.5	a
	35	26.1	4094
	35	44.7	4094

37	33.8	
37	43.5	
36	1.0	
	5.0	
36	22.0	
36	39.3	

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1890phae.proj..5tow

July 9. 1890.

16	40	35.2
	40	45.2
	41	1.8
	41	5.8
	41	23.0
	41	35.8
	~~41~~	~~6~~

~~42 14.6~~

~~42~~	46.0
42	55.5
43	11.9
43	13.9
43	34.8
43	50.5
44	37.5
44	47.0
45	3.0
45	7.0
46	25.0
45	41.2

See next page.

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1890phae.proj..51ow

July 9. 1890.

The stars taken in transit are 4094 P, 4094, and the star preceding 4090 5 3 1.5' north. Call this latter star a'.

Order in preceding transits star a', 4090, 4090, star a', 4094, 4094.

All in southern half of square.

Comp. Stars for Circumpolar Variables.

S Urs. Maj.

~~Stars. Maj.~~ 12 33 +61 17

17 10

+4 7.7

a 4 b

b 3 c

c 6 d

d ~~6.5~~ 3 e

e 3.5 e'

e 8 f

~~f 6.5 g~~

f 3 g

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1896phae..proj..5tow

Wednesday. July. 9-1896.

g 6 ~~k~~ h
h 3 i
i 4.5 j
j 3.6 k
k 5 l
l 5.5 m
m ~~7~~ 3 n
n 6 o
o 4 p

p thought to be seen, but o is practically at limit of visibility, tonight.

h 4 S i in large Tel.
~~k 3 S 1.5 i in finder.~~
h 3.5 S 1.5 i in finder.

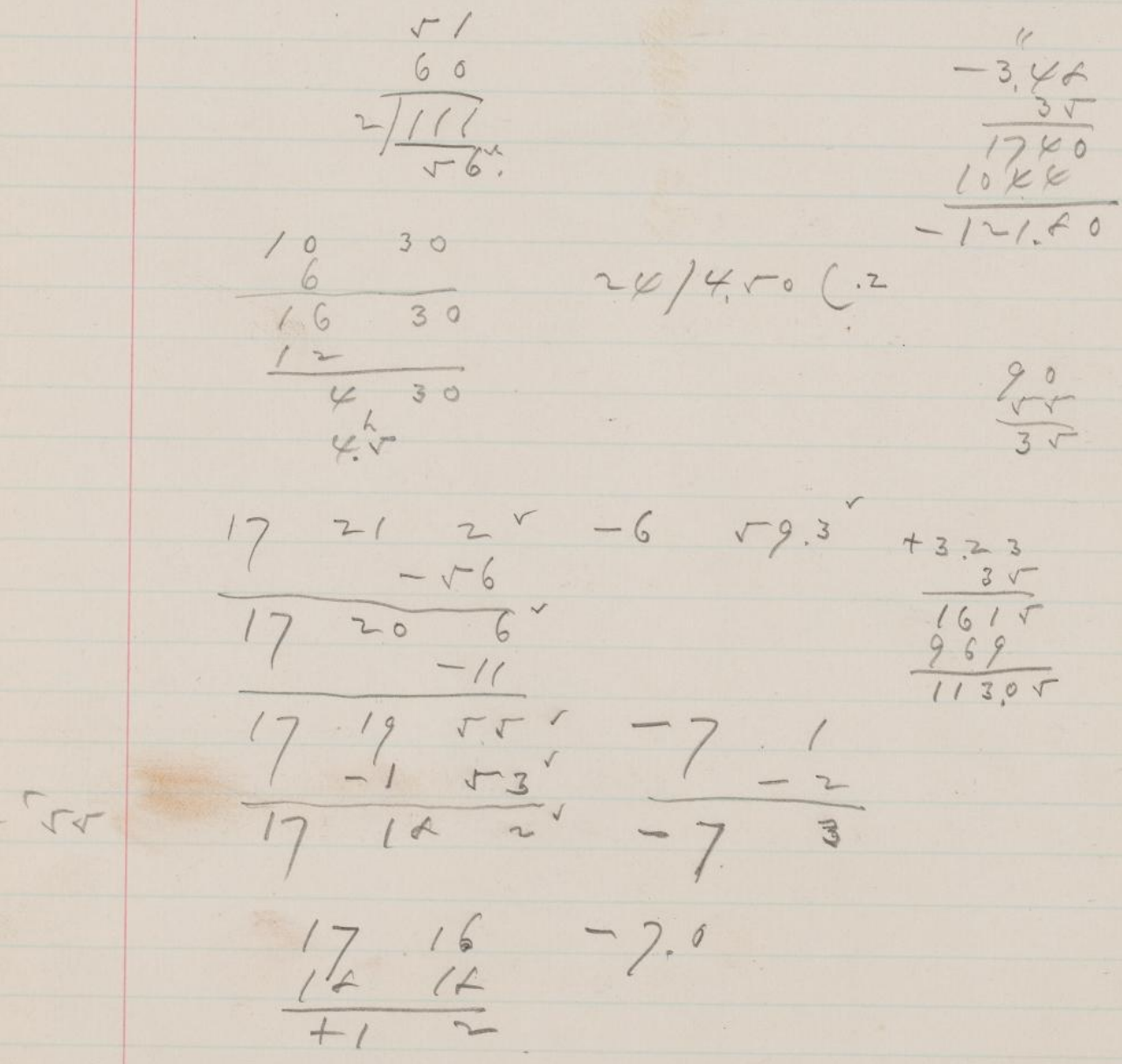
10 27 estimate 10.8

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1890phae.proj..510W

July 9. 1890.

Comet e 1888 (Barnard Sept. 2,) Trans.



Comet suspected but sky not clear enough for observation,

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1890phae.proj..510W

July 9. 1890.

Count a 1890 (Brooks Mar. 19) Wash. obs.

~~17 20~~

13 ∨9 +∨7 a

14 0
1a 37
+K 37

18	54	13.1	*
	55	30.4	*
	56	41.3	∈
	57	44.8	∈
	58	15.5	
	59	31.6	
19	0 0	41.9	
	0 1	46.1	
	0 2	26.6	
	0 3	42.3	
	0 4	52.6	
	0 5	57.0	
	~~0 6~~	~~37.5~~	

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1890phae.proj..510W

Wednesday July 9 - 1890

19	$0^{h}6$	37.5
	07	02.20
	09	2.0
	10	5.8
	10	55.4
	12	18.87
	13	22.8
	14	28.4
	15	49.0
	17	3.0
	18	10.6
	19	17.9

Order in preceding transit star. Star comet Comet, both in northern half of square.

Nucleus of comet rather poorly defined diameter of total nebulosity 2', tail can be traced probably for nearly a degree.

Comps. Star = Dm. +7° 1473 [A.1 B]

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July 9. 1890.

Fr. 3451.

19	48	55.7
	49	56.0

B. 394.

12	22	0.0
	23	0.0

1890phae.proj..510W

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1890phae.proj..510W

July 11. 1890.

Doubtful Cases with Mer. Circle. Fr. obs.

+50° 4215 and +50° 4208 and +49° 4303.

23 vr +E9.L

15 20

— 8 22

Pos Zero 15.7

45

Setting 60.7

8 15 Seeing 8.7.8.

15	54	31.5	4208
	54	54.7	4 3 2083
	55	3.3	4208
	55	41.0	4215
	55	58.0	4 3 4303
	56	27.1	4215

	7	6.6
	57	29.6
	57	39.5
	58	16.0
	58	33.6
	59	29

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1890phae.proj..510W

July 11, 1890.

15	59	40.6
16	0	2.9
	0	13.3
	0	49.5
	1	7.8
	1	36.9
	2	8.0
	2	31.1
	2	42.2
	3	17.5
	3	36.4
	4	5.5
	4	46.0
	5	9.4
	5	21.0
	5	55.7
	6	15.0
	6	44.1

~~Order in preceding transits~~ 4208, 4303. 4208, 4215, 4303, 4216. All in northern half.

This star is not double. No other star near it.

There is a quite faint star preceding 4215 18.5 sec. 45' south of it but which would probably be to faint to be seen with Meridian Circle. Another faint

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1890phae.proj..510W

July 11, 1890.

star precedes 4215 13.5 sec. 2.5 north of it. R This also would probably be too faint for Meridian Circle. Another star of the same brightness as 4215 precedes it 22 sec. 4' north of it. A star follows 3215 13.5 sec. 4' north of it. This star must be about 10.5 mag. These ~~are~~, the above, are the nearest stars to 4215

Comp. Stars for Circumpolar Var. Nr. 6.

χ^1 Ursae Maj.

12	37	+61.9
16	25	
3	48	

a 4 b
b 3 c
c 7 d
d 2.5 e
e 5 e'
e' 3 f
f 3 g
g 6 h
h ~~3.5~~ 4 i
i 4 j
j 2.5 k

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1890phot.proj..51ow

July 11, 1890.

k 5.5 l
l 5 m
m 4 n
n 5 o
o 3.5 ± p

o + p both very faint but p thought to be certainly seen.

q 25 ♃ S = i in large telescope
h 3.5 S ii in finder

Est. 10.7

Dome gives trouble again. Cannot be got over guide in south, as before.

Comet a 1890 (Brooks Mar. 19) ♃. obs.

Pos Zero 35 1.3
450
Setting 306.3

18	18	50.0	✶
	19	41.5	✶
	20	34.0	∝
	21	34.8	∝
	22	8.0	
	23	0.4	
	23	52.1	
	24	51.7	

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1890phae.proj..510W

July 11, 1890.

18	25	21.6
	26	14.2
	27	5.5
	28	5.6
	28	34.4
	29	28.2
	30	19.5
	31	18.2
	32	5.5
	32	58.2
	33	49.5
	34	48.0

Order in preceding transits star, star, comet, comet. Both in southern half.

For final identification and star reduction, see R. 56, p. 12.

Circumpolar Variables. Sr. obs.

7 hrs. resp.

12	33	+60.4
18	40	
6.	7	

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1890phae.proj..51ow

July 11, 1890.

11 08 C 4 T 1.5 d in finder
C 4 S 1 d in large telescope

Est. 8.5

R Draconis.

16	26	+67.3
18	47	
2	21	

11 18 Rather too ft for finder ~~Faint in finder~~ but very faint "j" 25 R 3 k in large telescope

Est. 12.4

R Ursæ Minoris.

16	3K	+72.2
19	00	
2	26	

11 24 C 3.5 R 1 d in large telescope
C 3 R 1 d in finder

Est. 9.4

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1890phae.proj..510W

July 11, 1890.

ζ Bootis.

14 17 +54.2
19 5
+ 4 48

11 35 i 2 S 3.5 f in large telescope
Same in finder

Est. 12.2

Fr. 34-1.			B. 394.		
19	20	36.7	11	46	0.0
	21	37.0		47	0.0

Before taking Comet a, examined region of Comet e 1888, but sky too hazy to see comet.

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1890phae.proj..510W

July 16. 1890.

Prof. W. H. Pickering looked at Mars. The details and color of same as seen by him, confirmed by W.

Circumpolar Variables. W. obs.

R Lyncis.

6 49 +vv.1
16 25
+ 9 36

8 57 f 3.5 R 29 in large telescope
f 3 R 29 in finder

Est. 9.5

Variable, low, and some light clouds near this region possibly affecting estimate a little.

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1890phae.proj..51ow

July 14, 1890.

R Ura. Eraj.

10	32	+69.3
16	46	
6	14	

9 14 b 5.5 R Ic in finder
b 5 R Ic in large telescope

Est. 7.3

S Ura. Eraj.

12	3	+61.7
17	3	
4	29	

9 22 $h \overset{3.5}{3}$ I i in large telescope
I = i in finder

Est. 10.8

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1890phae.proj...510w

July 14, 1890.

α Boötis.

14	20	+ v − ∠.3
17	11	
2	51	

9 37 h 3 S 1.5 i in large telescope
Same in finder

Est 12-1

9 38 Seeing 9.8.8

R Camelop.

14	40	+ ∠ ∠.1
17	27	
+ 2	47	

14	40
17	35
2	55

10 00 f 3.5 R 2g in large telescope
f 3 R 2g in finder

Est. 10.6

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1890phae.proj..stow

July 14, 1890.

R Ceti.

16 3 +72.9
17 40
1 6

10 08 c 3. R 2 d in large telescope
1.5
Faint in finder

Est. 9.4

~~R Draconis.~~

S Cygni.

20 4 +5A.3
18 0
2 8

10 27 ~~R~~ 25 4
S S q in large telescope
Too faint for finder

Est. 14.4

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1890phae.proj...510w

July 14, 1890.

Comet e 1889 (Barnard Sept. 2.) 4c. obs.

10 30
6
16 30
12
4 30

4.r / 2.4.

102.
4.r
r10
4 r r
2.4 | 4 r 9.0 (19
2.4
219
216

3.07
3 r
1 r 3 r
921
107.4 r

17 r a 3a
-19
17 r a 19
-1 47
= 'r r. 17 r6 32

-7° r.'6
-7 r.6

17 r6
1a 37
+41

Comet suspected but cannot be absolutely sure of it. Although the stars look somewhat bright to the naked

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1890phae.proj...510W

July 14, 1890.

there is so much dust & haze in the air that faint stars look dim.
Sky far from clear

11 05 Seeing 7, 8, 7

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1890phae.proj...510w

July 16, 1890.

Σ 2026.

~~H~~

16	9	+7.7
17	~~6~~	
	+55	

16	~~59~~	−19.3
17	12	
	+29	

δ Serpentis.

15	29	+11.0
17	35	
2	6	

Showed Prof. Michaelson several double stars, Mars, and Jupiter.

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1890phae.proj..stow

July 16. 1890.

Circumpolar Variables. Sr. obs.

S Cephei.

21 6 +67.7
14 30
− 2 36

10 50 d 2.5 S 1.5 e in finder
Same in large telescope

Est 7.2

S Cephei

21 37 +78.3
18 45
− 2 52

21 14
18 49
− 2 25

11 05 h 2.5 S 1.5 i in large telescope
Same in finder

Est. 10.5

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1890phae.proj...510w

July 17. 1890.

Circumpolar Variables. H. obs.

R Cassiop.

23 v1 +49.7
16 4v
-7 6

S t
0 1.5 R 3p in large telescope
0 1 R 3p in finder (stars however very faint in finder)

q 20

Est. 11.7

T Cassiop.

24 1A +vv.9
17 20
17 2
-16 58

q 2.5 T 1h in finder
q 1 T 2h in large telescope

q 35

Est. 8.8

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1890phae.proj..51ow

July 17, 1890.

κ Cassiop.

25
X 10 +72.1
17 33
−7 37

~~2 S~~

9 48 r 2 S 3 r in large telescope
Too faint for finder

Est. 13.6

κ Persei.

26
2 6 +57.2
17 47
−8 19

clouds

~~f 2.5 S 3 g in large telescope~~
~~f 2 S 3 g in finder~~

~~Est.~~

10 20 f 2.5 S 3 g in large telescope
f 1.5 S 2 g in finder

Est. 10.1

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1890phae.proj..510w

July 17, 1890.

Comparison star g tonight is certainly brighter than f by .3 or .4 of a mag.
The old wedge measurements make it nearly a mag. fainter than f and in the selection of comparison stars it was made to follow f also. Possibly either star g is variable.

T Persei

10 34 a 4 T 3d in large telescope
c 3 T 3d in finder

Est. 8.9

R Aurigae.

5	3	+v 3.0
18	35	
13	32	

Clouds

10 56 R = d in large telescope
Same in finder

Est. 8.0

Altitude rather low. Sky now fairly clear

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1890phae.proj..5tow

July 17, 1890.

but estimate possibly slightly affected by low altitudes

B + C. 11 h 2			B. 394.		
11	23	23.0	11	25	0.0
	24	23.0		26	0.0

Dis. Sup. II. Plat. - H. P. Obs. Struve,
Comps. with Sat. I.
Sat. I. 0.5 mag. brtr. than Sat. II.

11 40 11
12
11 42 23.
25 0.
23 23
11 23 23
11 46 46. Appr. time dis.

Small dense cloud obscured Jupiter shortly before beginning observations.

11	34	37.0	240.6
		52.5	5.4
	39	1.0	279.2
		17.5	1.3

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1890phae.proj...5tow

July 17. 1890

Clouds.

11	39	36.0	24.1
		43.5	39.9
		52.5	24.7
	40	4.0	3.2
		12.0	24.7
		22.0	4.4
		34.0	24.9
		47.0	2.2
		54.0	24.6
	41	3.0	1.3
		14.0	24.4
		25.6	0.2
		36.0	24.2
		47.0	2.4
		56.0	24.3
	42	5.5	3.2
		31.0	24.9
		41.0	1.4

Clouds.

	43	31.0	24.2.3
		42.5	0.0
		55.0	24.1
	44	4.5	3.7.4
		14.5	24.6.4
		25.0	1.4

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1890phae.proj..51ow

July 17. 1890.

11	44	34.0	244.7
		46.5	359.4
		56.0	244.5
	45	5.5	356.3
		12.0	249.4
		14.0	355.6
		27.0	291.7
		34.0	354.4
		45.0	291.4
		50.0	351.4
	46	0.0	293.4
		11.5	346.4
		24.0	297.6
		33.5	344.4
		43.0	302.3
		52.0	341.1
	47	0.0	305.5
		10.0	336.4
		23.0	317.3

Limit of Vis.

11	47	59.5	311.9
	48	16.0	331.4
		32.0	311.6
		46.0	331.5

Thin portion of cloud passing at intervals during eclipse. Seeing variable.

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1890phae.proj..510w

July 17, 1890.

B. + C. 11 h 2.			B. 394.		
11	√7	22.6	11	√9	0.0
	√6	22.6	12	0	0.0

~~B. + C. 11 h 2.~~ ~~B. 394.~~

B. + C. 11 h 2.			Hr. 1327.		
12	1	13.√	20	2	1.0
	2	13.√		3	1.0

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1890phae.proj..51ow

July 14. 1890.

Comps. Stars for Circumpolar Variables. Fr. Ch,

χ Cygni.

20	α	$+52.3$
16	14	
-3	52	

χ Cygni rather too light for measurements. Abandoned.

δ Cephei.

21	6	$+67.7$
16	30	
-4	36	

21	40	$+70.7$
16	53	
-4	47	

$\underline{a}$

7.05	7.10	41.9.2
6.75	7.00	9.09
7.00	7.02	

Measurements on star a made by measuring with scale beyond graduation.

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1890phae.proj..510w

July 18, 1890.

which ends at 6.50

20 41 +66.1
17 3
−3 38

b

6.48	6.72	
6.70	6.70	40.02
6.62	6.80	8.68

21 5 +70.9
17 10
−3 55

a

6.37	6.52	
6.36	6.49	
6.43	6.48	38.65
		8.38

d

6.10	6.12	
6.02	6.18	36.60
6.08	6.00	7.94

e

5.72	5.79	
5.90	5.68	34.89
5.93	5.87	7.57

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1890phae.proj..5tow

July 18, 1890.

f

5.10	5.22	
5.35	5.40	31.71
5.12	5.52	6.88

Star f is double. Principal comp. measured. Companion is 1.0 to 1.5 mag. fainter than principal comp.

g

5.04	5.03	
4.91	5.19	30.27
5.00	5.10	6.56

h

4.31	4.60	
4.28	4.62	
4.27	4.82	26.90
		5.84

i

4.11	4.38	
4.08	4.38	
4.22	4.12	25.29
		5.49

j k l

3.60	3.50	
3.70	3.89	
3.59	3.77	22.05
		4.78

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1900phae..proj..5tow

July 18, 1890.

j

3.52	3.59	
3.19	3.70	20.80
3.45	3.35	4.51

k

2.97	3.08	
3.07	3.10	
3.13	3.12	18.47
		4.00

Edit
Barnard

l

2.38	2.70	
2.39	2.79	
2.78	2.78	15.82
		3.43

m

1.92	2.48	
2.08	2.39	
2.29	2.46	13.62
		2.95

n

1.88	2.00	
1.90	2.20	
2.08	2.23	12.29
		2.66

o

1.88	1.80	
1.82	1.87	
1.96	1.95	11.28
		2.45

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1890phae.proj..stow

July 18, 1890.

~~X~~ Var.

6.02	6.10	
5.97	5.82	
6.18	5.98	36.07
		7.82

10 18 ~~e~~ = 8 in finder
Same in large telescope

Est. 7.0

Comp. Stars for Circumpolar Variables
R. Camelop.

14	40	+8°.1
18	25	
+3	45	

10 35

a 5 b
b 5 c
~~d 6.5 e~~
c 4 d
d 3 e
e 4.4 f
f 5 g
g 6 h
h 5 h'

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1890phae.proj..5iow

July 18, 1890.

h' 2.5 i
i 4 j
j 5 k
k 4 l
l 3 m
m 3.5 n

10 58 g 2/1.5 R 2.5 h in large telescope
g 2/2 R 3 h in finder

Est. 10.7

Object suspected by Swift. of being a Comet.

1 16 36	77 +9.2
−16	+1.6
1 16 20	77 +0.4
	+12 9.2

The object is undoubtedly N. G. C. +14 which precedes ~~+11°~~ 0 m. +12° 17 (and not 173, as Swift says) "10 secs. nearly on same parallel".

Swift's description of the object also agrees very closely with that given in ~~the~~ the N. G. C. with reference to No. +14.

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1890phae.proj..stow

July 19 1890:

Doubtful Cases with Mer. Circle. St. obs.

Δ ma. + ν Κ° 137 and. 145 and 148.

24

~~8~~ 3A +ν Κ. ν

16 12

~~16 32~~

+A 26

clouds

Considerably delayed by clouds.

Pos Zero 265.0

45

Setting 310.0

16	46	41.0	137
	47	31.7	137
	49	26.0	145
	49	48.1	148
	50	10.5	145
	50	30.0	148
	51	4.8	
	51	56.5	
	53	50.0	
	54	12.0	
	54	35.7	
	54	55.0	

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1890phae.proj.510w

July 19, 1890.

16	55	37.8	37
	56	30.0	
	58	22.8	45
	58	44.8	
	59	9.5	45
	59	28.5	
17	0	10.5	
	1	4.9	
	2	56.0	
	3	17.5	
	3	43.6	
	4	3.0	
	4	35.2	
	5	29.6	
	7	20.5	
	7	42.0	
	8	8.8	
	8	28.3	

Order in preceding transits, 137, 137, 145, 148, 145, 148. All in northern half.

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1890phae.proj..510W

July 19, 1890.

Comp. Stars for Circumpolar Variables. Tr. obs.

S Urs. Maj.

12 34 +61.7
17 15
+ 4 41

Relative Estimates.

9 7 a 4.5 b
b 3.5 c
c 7 d
d 3 e
e 4 e'
e' 3.5 f
f 3.5 g
g 5.5 h
h 4 i
i 4.5 j
j 3 k
k 5 l
l 4.5 m
m 3.5 n
n 5.5 o
9 25 o 4 p

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1890phae.proj..51ow

July 19. 1890.

B. + C. 1182.			B. 394.		
9	28	19.3	9	30	0.0
	29	19.3		31	0.0

~~Dec~~ Dec. of Sup. IV. Phot. H. P. obs. Fr. rect. Circles read by J. Compared with Cat. I. which precedes.

9	38	21.0	102.1	
		32.0	176.1	
		49.5	102.2	1
	39	7.0	180.3	
		16.0	101.6	
		26.0	174.3	
		35.0	100.4	2
		46.5	170.3	
		55.0	101.9	
	40	3.0	173.5	
		11.0	100.8	3
		17.5	176.3	
		29.0	105.1	
		39.0	175.9	
		46.0	105.0	4
		57.0	176.9	
	41	11.0	107.5	
		20.0	173.6	5

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1890phae.proj..5tow

July 19. 1890.

9	K1	24.V	107.V
		KK.0	173.3 — V
		V6.0	106.A —
	KV	6.0	173.9
		1K.0	16K.9
		26.0 —	177.3 — 6
		36.0	10K.V
		K6.0	17K.V
		VV.0	10K.9
	K3	3.V	173.K — 7
		10.0 —	106.7
		20.0	17K.V
		30.0	106.1
		K0.0 —	172.A — 8
		VV.0	10K.A
	KK	6.V	173.V
		16.0	10V.K 9
		300 —	17K.1
		K7.V	10V.7 —
		VK.V	17K.1
	KV	9.0	10K.A HH 10
		23.0 —	176.1 →
		3K.0	107.K
		K6.0	173.A
	K6	1.0	107.A
		11.V —	17V.7
		21.0	100.2 —
		3V.0	173.A

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1890phae.proj..5l0w

July 19. 1890.

9	6	57.0	10 5.2
		57.0	17 7.2
	7	7.0	10 6.2
		6 4.5	17 3.9
		24.0	10 1.8
		60.0	17 6.7
		52.0	10 6.8
	8	6.5	17 5.1
		20.0	10 3.7
		30.0	17 2.0
		38.0	10 5.8
		69.0	17 2.6
	9	3.0	10 7.1
		15.0	17 3.2
		26.0	10 5.0
		31.0	17 3.0
		60.0	10 6.3
		69.5	17 6.7
		58.5	10 5.8
	10	9.5	17 5.2
		9.5	10 6.8
Con. = 1m 4s		24.0	17 2.5
		36.0	10 2.3
		66.5	17 6.6
		56.5	10 3.3
	11	7.0	17 1.8
		16.0	10 6.0

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1890phae.proj..51ow

July 19. 1890.

9	24.0	17[illegible].7
	17.0	106.6
	[illegible].0	17[illegible].0 —
	[illegible].[illegible]	10[illegible].6
	[illegible].0	17[illegible].3
[illegible]2	[illegible].0	106.9
	11.[illegible]	173.9 —
	19.[illegible]	106.3
	24.0	170.9
	34.0	109.3
	[illegible].0 —	173.[illegible] —
	[illegible]1.[illegible]	109.3
	[illegible].[illegible]	170.[illegible] help
[illegible]3	[illegible].[illegible]	110.[illegible]
20.0	{11.0 ~~[illegible]~~	~~342.2~~ {173.9} mean
	{24.0 —	191.1 {164.3} —
	3[illegible].[illegible]	10[illegible].4
	[illegible]2.0	17[illegible].[illegible]
	[illegible]7.[illegible]	110.2
	[illegible]2.[illegible]	170.3
	[illegible]9.0 —	109.3
[illegible]4	[illegible].[illegible]	170.2
	16.0	109.[illegible]
	20.0	169.[illegible]
	29.0 —	10[illegible].3 —
	3[illegible].[illegible]	169.4

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1890phae.proj..5i0w

July 19. 1890.

9	57	41.5	110.2
		42.0	167.6
		45.0	109.4
	55	8.0	172.2
		12.0	112.3
		14.0	163.7
		30.5	112.7
		36.5	164.9
		44.0	112.4
		50.5	169.6
		54.0	112.7
	56	3.5	166.5
		10.0	109.1
		15.0	169.0
		20.0	115.5
		24.0	165.9
		38.0	109.9
		39.0	163.6
		47.0	114.4
		51.5	162.3
		57.5	117.5
	57	8.5	166.6
		10.5	117.5
		16.5	160.4
		22.5	117.4
		24.0	160.2

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1890phae.proj..slow

July 19. 1890.

9	23.5	184.0
	44.0	179.6
	50.5	116.2
	54.0	154.4
54	5.0	122.1
	11.0	156.1
	15.5	122.3
	22.0	154.0
	30.0	123.0
D	36.0	156.4
	40.0	126.6
	42.5	152.4
	44.4	127.6
49	3.5	153.2
	10.0	127.5
	15.0	122.2
	19.5	126.0
	24.5	156.3
	30.0	124.4
	35.0	151.1
	44.0	124.2
	50.5	150.3
	54.5	127.3
10 0	1.0	144.2
	6.0	125.4
	12.0	184.4

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1890phae.proj..510w

July 19. 1890.

10	0	20.0	124.1
		24.5	146.1
	1	14.5	Seen with ordinary eyepiece.
	1	34.0	Still seen.
		43.5	"
		56.0	Suspected.

Limit of Visibility.

≠

10	3	9.0	126.5
		19.0	146.0
		24.5	126.9
		34.5	146.7

B. + C. 1142.			B. 39 K.		
10	14	14.0	10	16	0.0
	15	14.0		17	0.0

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1890phae.proj..510W

July 19. 1890.

Circumpolar Variables. Fr. Ts,

I Urs. Maj.

12 33 +60.K
18 40

6 7

Relative Estimates.

10 2✓

a 5 b
b 6 c
c 7 d
d 3 e
e 6 e'
e' 5 f
f 4 g
g 4 h
h 2.5 i
i 4.5 j
j 3 k
k 5 l
l 4.5 m
m 3 n
n 4 o
o 5 p (~~if seen, but not certainly seen~~)

q not certainly seen.

The variable being bright, and near, makes it difficult to see star q.

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1890phao.proj..51ow

July, 19, 1890.

+0
11 06

T = d in finder
C & 5.5 t 2d in large telescope

Est. 8.5

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1890phae.proj..5tow

July 21. 1890.

Coggia's New Comet

$$\begin{array}{r} 9 \quad \not{4} \\ 1\not{4} \quad \not{4} \\ \hline +9 \quad 0 \end{array}$$

$+\not{4} = 2.6$

$$\begin{array}{r} \not{4} \quad -6 \\ 1\not{4} \quad 9 \\ \hline 9 \quad 13 \end{array}$$

Pos. Comet

$\not{4} = 2.6$

$\equiv$ found,

Pos zero 128.7
$\not{4}$ 5.0
Setting 173.7

18	18	10.6
	18	41.4 +3 = 41.7
	20	13.5
	20	48.2
	21	27.8
	21	57.4
	23	24.6
	24	5.5

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1890phae.proj..510w

July 21, 1890.

18	24	46.5ᵐ
	25ᵐ	3.1
	26	36.3 + 5ᵐ = 36.8
	27	27.5ᵐ
	28	55.1
	29	22.4
	30	57.9
	31	35.4

Order in preceding transits star, star, comet, comet. Star in northern half. Comet in southern.

Fainter star foll. comp. star 8 sec. 1.5′ south

Faint star foll. comp. star 8 sec. 11′ south

Comparison star = DM +42° 1990 (8.3 L)

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1890phae.proj..510W

July 22. 1890.

Coggia's Nav Comet. Sr. obs.

Comet b 1890 = 1890 III.

9^h $20^m.5$ $+41°41'$

9	14
16	25
+7	7

9	1.8
16	40
+7	22

16	48	+41.8
7	32	
9	16	

16	59
7	44
9	15

Pos Zero. 128.6

45.0

Setting 173.6

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1890phot.proj..510w

July 22, 1890.

17	19	46.0	∈
	20	46.5	∈
	20	53.1	*
	21	13.6	*
	21	50.0	
	22	45.0	
	22	57.2	
	23	15.6	
	24	11.9	
	25	5.8	
	25	19.0	
	25	36.0	
	26	7.1	
	27	0.3	
	27	13.5	
	27	29.0	
	28	31.0	
	29	24.0	
	29	26.5	
	29	51.5	

Order in preceding transits comet, comet, star, star. Both in northern half.

Comet Diameter of total nebulosity

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1890phae.proj..510W

July 22, 1890.

1.5 to 2'. Considerable central condensation with a somewhat decided maximum at center but central condensation not quite stellar. Gen'al light impression of the comet equal to an 8.5 to 9.0 mag. star. No signs of a tail visible. Comet however is pretty low. Sky not quite clear and some moon. Possibly also a little twilight still.

Comparison star = D M +41° 1963 (7.3 K)

	B. 236.		Ballon 103.		
17	43	14.7	9	26	0.0
	44	15.0		27	0.0

Comp. Stars for Circumpolar Variables, Relative Estimates. Gr. Obs.,
7 Urs. Maj.

12	33	+60.4
17	58	
5	25	

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1890phae.proj..510w

July 22, 1890.

Some cloud at present.

a	4.5	b
b	5.5	c
c	6.5	d
d	3.5	e
e	6.5	e'
e'	5	f
f	3.5	g
g	4	h
h	3.5	i
i	4	j
j	3	k
k	5	l
l	5	m
m	3.5	n
n	3.5	o
o	4	p
p	4	q

q thought to be seen at times

10-30

c 5 T 2 d in finder
c 5.5 T 1 d in large telescope

Est. 8.5

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1890phae.proj..510W

July 22, 1890.

S Bootis

14 16 · +5° 4.5'
18 48
4 32

a 4.5 a'
a' 3 b'
b' ~~4~~ c
c 4.5 c'
c' 3.5
c' ~~4.5~~ d
d 5 e
e 5.5 f
f ~~3.5~~ g
g 5 h.
h 4.5 i.
i. ~~4~~ j
j 4 k
k 4 l
l 2.5 m
m 5 n
n 3.5 o
o ~~3.5~~ p

o & p thought to be seen so that est. was made. They are however very difficult tonight.

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1890phae.proj.510w

July 22. 1890.

11 00 g 1 S 4 h in finder
g 15 S 35 h in large telescope

Est 10.9

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1890phae.proj..510W

July 23. 1890.

Comet Coggia = Comet b 1890. Tr. obs.

9	26	+10.2
16	21	
6	55	

Pos. Juno 208.0
.45.
Setting 253.0

8 44 Seeing 8.7.7

17	8	15.4 ∝
	8	55.2 ∝
	12	51.6 *
	13	53.5 *
	15	11.9
	15	55.5
	19	49.3
	20	49.2
	21	35.3
	22	18.5
	26	8.9
	27	12.5

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1890phae.proj.510W

July 23, 1890.

17	28	1.3
	28	49.0
	32	36.2
	33	37.5
	34	43.5
	35	28.5
	39	13.2
	40	19.5

Order in preceding transits comet, comet, star, star. Comet in northern half. Star in southern.

Comet seems to have faint trace of tail to following but tail does not extend far. Comet about equal to 8.5 mag. star

Comparison star = DM +40° 2232 (5.5 K)

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1890phae.proj..5tow

July 23. 1890.

B. 236. Ballon 103.

17 52 10.8 9 31 0.0
53 11.0 32 0.0

Comp. Stars for Circumpolar Variables. N. Ob.

I Urs. Maj.

12 33 +60.K
18 1
5 28

9 50 ~~5.28~~
~~5.30~~

a

5.28 5.13
5.30 5.42
5.23 5.30

b

Sky becoming cloudy: not safe to continue photometric measurements of comparison stars.

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1890phae.proj.-510w

July 23, 1890.

Doubtful Cases with Iver. Circ. Sr. 6s.

+50° 381 and 388

1	44	+50.4
18	27	
16	43	

Pos. Zero 46.0
45
Setting 91.0

18	40	45.5	381
	41	11.5	"
	41	51.5	388
	43	1.5	"
	43	40.5	
	44	5.0	
	44	46.5	
	45	54.5	
	46	40.6	
	47	5.9	
	47	47.0	
	48	55.4	

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1890phae.proj..stow

July 23, 1890.

18	49	42.0
	50	7.8
	50	48.0
	51	57.2
	52	36.5
	53	2.8
	53	42.5
	54	51.8

Order in preceding transits

381, 381, 388, 388, Both in nocturne half.

This star is not double. The nearest star to it is DM +50° 380.

+50° 500 and 499

2 00 +51°
18 59
16 59

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1890phae.proj...510W

July 23, 1890.

19	6	54.5	499
	7	7.0	500
	7	46.5	499
	8	10.1	500
	8	54.1	
	9	6.0	
	9	46.0	
	10	9.1	
	10	40.5	
	10	52.5	
	11	32.0	
	11	55.5	
	12	27.7	
	12	40.0	
	13	19.8	
	13	42.4	
	14	25.0	
	14	38.0	
	15	17.6	
	15	40.5	

Order in preceding transits 499, 500, 499, 500. 499 in northern half. 500 in southern half.

This star is not double. No star [it sufficiently near to be confounded with

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1890phae.proj..stow

July 23. 1890.

There are two sharply defined spots on the lower of the two principal belts on Jupiter. One, and the sharpest, is near the middle, with respect to preceding and following and the other is about half way from the middle to ~~following~~ preceding edge, and both on the lower side of the ~~principal~~ ~~bel~~ lower of the two principal belts. Seen with various powers.

W. Ob.

B. + C. 11 A 2.

12	19	8.2
	20	8.2

Ballou 103.

12	21	0.0
	22	0.0

Dis. Sup. I. Plot. R. P. obs. Sr. rec.
Comp. with Sat. II. (First Sat. preceding.)

12	2 V	3 V. V
		V 1. V
	26	7.0
		2 V. 0
		37.0
		V 1. 0
	27	3.0
		1 V. 0

333 V

~~7 V. 2 5 V 2~~

1 V V. 3

2 V 3. V

1 V 2. V

2 V 3. V

1 V V. 0

2 V V. 2

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1890phae.proj..5i0w

July 23. 1890.

12	29	27.0	1v3.1	
		2v.v	2v0.0	
		v2.v	1v4.6	3
	24	4.v	2v3.6	
		1v.0	1v7.0	
		24.0	2v0.4	
		36.0	1v2.4	4
		4v.0	2v2.6	
		v7.v	1v4.4	v
	29	6.v	2v2.1	
		14.v	1v3.v	
		30.v	24.9	
		41.0	1v6.7	6
		v2.v	2v1.4	
	30	6.0	1v7.7	
		47.v	24.2	
		24.v	1v0.4	
		4v.v	2v3.7	
	31	4.0	1v6.v	7
		14.0	2v2.7	
		29.v	1v4.4	
		40.0	2v0.6	4
		vv.0	1v9.4	
	32	7.0	24.7	
		2v.0	1v4.9	
		40.0	2v1.4	
		v4.0	1v6.9	
	33	7.v	2v0.3	

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1890phae.proj...5108

July 23. 1890.

12	33	21.5	1522.0
		34.5	2429.9
		27.0	1522.6
		24.0	2524.4
	34	24.0	1527.7
		19.0	2522.4
		30.0	1523.4
		20.5	2521.7
		22.0	1524.7
	35	33.0	2426.6
		13.5	1524.4
		23.5	2429.2
		35.5	1624.7
		24.0	2420.6
		26.5	1625.7
	36	33.5	2426.6
		11.0	1679.9
		14.0	2423.2
		30.0	1773.3
		37.5	2321.4
		27.0	1793.3
		23.5	2225.6
	37	25.0	1827.5
		22.5	Susp.

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1890phot..proj..51ow

July 23. 1890.

Limits of Vis.

12	37	4.0	17.3
	38	1.0	22.3
		14.0	18.2
		24.0	22.3

Seeing moderately good.

B. + C. 11.2.			Ballou 10.3.		
12	46	4.0	12	48	0.0
	47	4.0		49	0.0

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1890phae.proj..510W

July 26. 1890.

Demings Star Const. Gr. hs.

1	14	+7
14	6	
+3	+8	
+2	2	

14	
+3	1

Comet looked for in casual spaces in clouds, but not seen. Probably it is rather faint.

11 0 Sky all cloudy now.

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1890phae.proj..510w

July 27. 1890.

Comet Deering.

Gr. Mn.

Comet 1890 VI = 1890 c

15 14 12 +74° 21'

+19 +8

15 14 31. +74 33

21 6

+5 52

90
5
3

-5 -13.2
3 3
27 66
16 396
19.2 4620

14 52
21 6
+6 14

Pos. Zero. 230.0
Setting. 275.0

21	27	33.0	E
	28	48.5	E
	32	22.5	*
	33	24.5	*
	34	29.7	
	35	46.8	
	39	18.2	
	40	18.8	

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1890phae.proj..51ow

July 27. 1890.

21	41	42.5
	42	47.0
	46	26.5
	47	25.5
	50	2.9
	50	57.0
	54	42.0
	55	39.6
~~21~~	~~57~~	~~51.5~~
21	59	41.5
22	0	32.0
	4	21.0
	5	14.0

Order in preceding transit comet comet star star

Comet in Southern half star in Northern half.

Comet very faint. Total light impression of comet not more than a 12 – 12.5 magnitude star

There is a somewhat well defined small nucleus; but it is not over 13 – 13.5 magnitude.

Diameter of total nebulosity 1 minute of arc.

There seems to be a faint tail which can be traced 3 or 4 minutes of arc directly to following.

At times it seem to extend

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1890phae.proj..510w

July 27. 1890.

perhaps 5 minutes of arc, when viewed by indirect vision.

Transits quite difficult, both from the slow motion at this declination and also from the faintness of the comet.

Transits can only be taken with certainty by indirect vision.

Comp. Star = Dm. +74° 609 (6.7 A.)

B. 236.			B. 394.		
22	34	26.4	13	57	0.0
	35	26.6		52	0.0

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1890phae.proj..51W

200

July 24. 1890.

4 10 Sky now partially clear but more clouds apparently coming.

9 0 Sky now completely ~~of~~ covered ~~but~~ and with no prospect of clearing.

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1890phae.proj..510w

Aug. 1. 1890.

Comet Coggia (July 18) Tr. obs.

10	18	+33
16	vv	
+6	37	

10	18	6	+33	v
	−2	0		+11
10	16	6.	+33	16

10	16	
17	v	
+6	49	+346

Pos. Zero 229.2
45
Setting 2742

17

23	246	∈
23	350	*
23	47.3 − 2 = (47.1	∈
24	21.2	*

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1890phae.proj..slow

Aug 1, 1890.

25	21.5	≡
25	35.4	*
25	49.8	≡
26	22.5 + 2 = 22.7	*
27	16.8	
27	30.3	
27	45.2	
28	18.5	
29	12.0	
29	24.9 − 1 = 24.8	
29	40.8 + 2 = 41.0	
30	14.4	
31	9.5	
31	21.5	
31	38.8	
32	12.3	
33	58.5	
33	10.3	
33	27.7	
34	01.4 + .6 = 2.0	
35	9.3	
35	19.4	
35	38.5 + 1 = 38.6	
36	12.0	

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1890phae.proj..51ow

Aug 1, 1890.

3	12.5
3	22.0
3	42.3
3	16.5

Order in preceding transits comet, star, comet, star. Both in southern half.

Comet faint and low, some cloud, twilight rather strong.

Comps. Star = 2 m. + 33° 19' 21" (9.4 B)

	B. 236.		B. 394.	
17	50	12.0	54	0.0
	51	12.0	55	0.0

∴ B 236 is 1m 44.8 slow

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1890phae.proj..51ow

Aug. 1. 1890.

Circumpolar Variables. Fr. obs.

T Ursæ Maj.

12	33	+60.4
14	47	
+6	14	

10 08 T = e in large telescope
Same in finder

Est. 9.0

S Ursæ Maj.

12	34	+61.4
19	5	
6	31	

10 21 i 35 S 1.5 f in large telescope
Rather too faint for finder
(Moon bright)

Est. 11.7

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1890phae.proj..510W

Aug - 1. 1890.

ν Boötis.

14 16 +54.6
19 17
5 1

10 31 f 4 S 39 in large telescope
Same in finder Abt faint

Est. 10.5

R Ursæ Minoris.

16 34 +71.9
19 27
2 53

10 40 C 3 R 1.5 d in large telescope
C 3.5 R 1.5 d in finder

Est. 9.4

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1890phae.proj...510W

Aug. 1. 1890.

R Draconis.

16 −26. +67.4
19 37
3 11

10 51 g 1 R 3.5 h in large telescope
g 1 R 3 h in finder

Est. 10.2

B. + C. 1142.

11 0 33.3
1 33.3

B. 394.

11 1 0.0
2 0.0

Reap. Jus. I. Phot. H. P. obs. Since,
Compared with first Sat. pl.

Passing clouds.

11 14 −3.0 Susp. but too close to the mean.

K 4.0 −3 K.6
V 4.0 −9 K.V
19 A. 0 −2 A.6
15.0 −9 −.

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1890phae.proj..51ow

Aug. 1, 1890.

11	19	28.0	229.7
		30.0	292.6
		34.0	229.K
		K7.0	292.2
		27.0	227.K
	20	6.V	294.3
		14.V	229.3
		30.V	303.3
		K7.0	22K.7
		VV.V	294.4
	21	3.0	2K.K
		1C.V	300.9
		27.0	22K.4

Clouds Obs. invis.

21	VK.0	303.2
22	10.0	22V.0
	24.V	301.6
	KV.V	223.V
	V4.0	294.K
23	10.0	221.2
	V0.V	301.4

~~24~~ Jupiter nearly invisible.

Further observations stopped by clouds.

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1890phae.proj...510W

Aug. 1. 1890.

B. + C. 11h2.

11	33	33.0
	34	33.0

B. 394.

11	34	0.0
	35	0.0

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1890phae.proj..51ow

Aug. 4 1890

B & C. 1182

8	29	22.5	
	30	22.5	

B 394

8	30	0.0
	31	0.0

8	55	49.5	
	8	12	
9	4	1.5	
		38.5	
9	3	23.0	time by chronometer

of disappearance of Satellite II

Compared with Satellite I.

Photometer R. Sobs. ~~S.~~ R. rec.

~~28~~ 8 - 55 = 33.0

1 3.

1 8.

4 6. 310.8

5 4. 305.8

~~27~~ 9 1. 285.3

The above only for practice.

Limit of visibility

8	57	32	191.7
	58	0	213.2
		24.5	194.0
		40.5	213.9

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1890phae.proj...510W

Aug 4. 1890

g^2	3	8.0	Leon.
		15.5	192.2
		30.5	212.3
		45.5	180.0
	4	0.0	226.2
		15.0	178.8
		28.0	223.2
		40.5	172.0
		57.5	227.4
	5	8.5	174.7
		22.5	238.2
		41.0	169.8
		59.5	232.0
	6	6.5	170.3
		22.5	238.0 —
		36.5	168.1
		58.5	240.0
	7	9.5	163.2
		32.5	231.6 — 1
		57.5	158.7
	8	17.5	243.2
	8	34.0	157.1
	9	34.0	243.8 — 2
		55.5	166.7
	10	17.5	241.0
		34.0	166.2
		50.5	234.4 — 3

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1890phot.proj..5tow

Aug 4. 1890

9	11	7.0	159.4
		24.5	244.8
		40.5	160.5
	12	3.0	236.7 — 4
		21.5	167.2
		56.5	245.3
	13	17.0	167.0
		35.0	247.2 — 5
		57.5	166.8
	14	5.5	239.0
		23.5	165.3
		42.0	243.0 — 6
	15	4.0	167.7
		28.5	237.0
		46.5	166.8
	16	0.0	236.3 — 7
		18.0	161.6
		43.5	240.8
	17	0.0	162.9
		15.5	239.7 — 8

B 1182

9	23	21.4
9	24	21.4

B 394

9	24	0.0
	25	0.0

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1890phae.proj..510W

Aug 5, 1890.

Observations of Reappearance of Satellite IV.

B 394 — Bl. C. 1182

8 20 0.0 — 8 19 7.8

21 00 — 26 7.7

		8	80	Sec.
			+3 8	▷ 9.6
			5 6 13	10 4.1
	37		0 5 9	▷ 8.2
			1 2 7	19 2.3
			2 2 10	▷ ▷ .8
			2 9.5 7	10 8.2
			3 ▷.0 8	▷ ▷. 1
			4 6.0 9	10 ▷. ▷
Minutes added Below			5 5.0 9	▷ ▷. 0
	38		0 0 5 5	10 ▷. 8
			1 0. 10	7 8. 2
		15	~~5~~ 5	10 5. 4
			25 10	▷ ▷ . 3
			3 1.5 6	10 5. 8
			4 0.0 9	▷ 6. 9
			4 8. 8	10 5. 1
			5 6.5 8	▷ 5. 4
Assumed ? 3.5	39		2 0.5 7	1 13. 4
			10.5 7	▷ 5. 4
		21	2.4 12	11 1. 1
			3 2.0	▷ 3. 6

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1890phae.proj..51ow

Aug 5, 1890.

	41, 5	111, 0
	50, 5	79, 6
	59, 0	146, 4
40	10, 5	92, 3
	20, 5	114, 0
	27, 5	69, 3
	30, 0	178, 6
	43, 0	90, 8
	56, 0	116, 1
41	18, 0	90, 8
	20, 0	118, 3
	29, 5	68, 0
	39, 5	147, 6
	50, 0	67, 6
42	00, 0	118, 3
	11, 5	67, 8
	22, 5	121, 2
	32, 5	60, 9
	42, 0	121, 2
	51, 5	60, 1
43	10, 5	122, 1
	19, 0	63, 3
	24, 5	124, 8
	33, 5	64, 9
	46, 5	175, 1
	58, 5	64, 8
44	00, 5	124, 4

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1890phae.proj..510W

Aug 5, 1890.

	48,5	64,3
	0 8,0	122,7
45	1 1,0	09,6
	22,5	123,0
	32,0	60,4
	47,5	123,2
46	13,5	87,9
	14,5	124,7
	23,0	08,3
	36,5	124,2
	49,5	62,0
	54,5	12 05 6
47	11,5	09,4
	20,5	130,1
	33,0	08,6
	42,5	120,6
	50,0	08,8
48	4 1,0	126,4
	15,5	61,6
	29,5	120,4

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Aug 5, 1890

50	0 0, 0	6 4, 1	
~~27~~	14, 5	13 1, 9	
	~~27, 6~~	~~63, 0~~	
		127, 1	
51	5, 5	5 8, 6	
	14, 5	12 5, 8	
	24, 0	57, 6	
	34, 0	125, 6	
	41, 5	56, 0	
	51, 5	127, 6	
52	27, 5	61, 6	1
	36, 5	128, 4	
	46, 0	56, 0	
	57, 5	127, 6	
53	11, 0	60, 6	2
	25, 0	128, 9	
	38, 5	55, 6	
	50, 0	127, 8	
54	0, 5	53, 0	3
	10, 5	124, 6	
	21, 5	54, 2	
	30, 0	131, 8	
	39, 5	52, 6	4
	52, 0	129, 4	
55	3, 5	59, 8	
	14, 0	126, 7	5
	24, 0	59, 8	
	33, 5	128, 2	
	43, 0	60, 8	

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	5ʰ 4ᵐ 3ˢ	128.6
56	6.0	57.7
	16.0	127.2
	8 .3	60.3
	56 .3	128.3
57	9.0	57.0
57	14.3	128.4

Limit of visibility

5ʰ 7.0	81.3
5 3	103.3
14.3	83.1
26.0	100.2

Observations of Rect. of Jupiter IV Sat. Rec. Rec. Recorder. Coupled by Rod R with pilot Sat. Jolle. Comp. with Sat. I. ⊖ 1.0.
Records somewhat uncertain.

B894	B + C 1182
9.40.00	9-39 - 7.0
41.00	40. 7.6

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1999phas..prof...51W

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